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Organizational Characteristics as Predictors of Hospital Accreditation

Rebecca B. Graystone
Walden University

Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral dissertation by

Rebecca B. Graystone

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

Review Committee
Dr. Robin Sneed, Committee Chairperson, Health Services Faculty
Dr. Kristin Wiginton, Committee Member, Health Services Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
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Abstract

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Rebecca B. Graystone

MS, University of Maryland, University College, 2005

MBA, University of Maryland, University College, 2006

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Abstract

Hospital accreditation has had wide and longstanding acceptance as a key quality tool to drive efficient, effective healthcare. Researchers have more recently questioned factors commonly related with accreditation achievement given accreditation's general association to better patient care, risk management, and cost reduction. Even less information was known about predictors of accreditation failure, which could be addressed by hospital administrators in advance of seeking application. Accordingly, the purpose of this cross-sectional study was to examine if hospital structures and processes were predictors of accreditation failure. The research questions explored hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and innovation and the likelihood of hospital accreditation failure. Donabedian's quality model provided a theoretical framework to explore relationships. A purposive sampling methodology of 648 U.S. accreditation applications for a hospital nursing accreditation program was employed. Archival data from 2015 to 2020 were analyzed using multivariable logistic regression techniques. Findings suggested hospital location and size were not significant predictors of accreditation failure. However, transformational leadership behaviors, exemplary practice actions, and ownership status were significant predictors of accreditation outcomes. This study added to prior research of hospital accreditation as an achievable quality management tool. Understanding factors predictive of accreditation failure may assist leaders in effectively managing resources needed to achieve successful accreditation and ultimately improve care delivery.

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Dedication

This work is dedicated firstly to my children, Chloe and Alex, and my husband, Julien, who patiently supported me throughout my ongoing journey toward self-actualization. To my parents, Ted and Martha, who continue to inspire me and instill the value of education throughout my lifetime. Lastly, to my fellow nursing and hospital leaders who strive every day to improve care on behalf of the families and communities we are so honored to serve.

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Chapter 1: Introduction to the Study

The importance of hospital quality and safety in the United States has driven hospitals to adopt standardized approaches to care delivery and systems to evaluate their adoption. The primary system to evaluate adoption is hospital accreditation. Hospital accreditation has been broadly defined as a systematic evaluation of a healthcare organization against accepted standards (Araujo et al., 2020; Hussein et al., 2021). Accreditation has been a long-standing and widely accepted quality and safety improvement method for hospitals (Araujo et al., 2020; Hussein et al., 2021; Lam et al., 2018; Petrovic et al., 2018). Hospital accreditation types may involve an entire healthcare system, a facility, specialty, or subspecialty practice (Hussein et al., 2021). Over 70 countries in addition to the United States have used hospital accreditations as an important part of quality assurance (Brubakk et al., 2015), regulation, and reimbursement schemes for health care services.

Regulators may mandate hospitals achieve accreditation to meet certain legal or reimbursement criteria. In the United States, federal, state, and local agencies regulate hospitals through complex legal systems of oversight to protect patients, facilities, and providers. The federal government agencies include the Department of Labor and the Department of Health and Human Services. Within the Department of Health and Human Services are the Centers for Medicare and Medicaid Services (CMS) who legally require hospital accreditation as a condition of participation or eligibility for this government-funded insurance. States regulate hospitals operating within their jurisdiction primarily through state public health agencies. State agencies are mostly

organized through state health departments whose functions include licensing, accrediting, and regulating health care providers in partnership with local health agencies. In addition to legal requirements, third party private and government payors may mandate hospital accreditation as a criterion for payment for covered services.

The largest payor for U.S. hospital care is the federal government's CMS. CMS requires hospitals that accept CMS payments to be either privately accredited or to pass state accreditation inspections. Currently, over 80% of CMS-participating hospitals have chosen private accreditation (Jha, 2018) to meet the mandatory CMS requirement. Private or commercial insurers follow CMS's condition of participation requirements. Healthcare organizations may also seek voluntary hospital accreditations, in addition to required, as symbols of commitment to safety and quality and as credibility and competitive advantages.

Accreditations vary in type and scope but often have similar processes. Accreditation processes generally involve training, adherence to and adoption of evidence-based standards, and implementation of requirements, followed by validation processes to evaluate compliance (Araujo et al., 2020). If successful, accredited organizations receive accreditation status for a 3- to 4-year term. As that term expires, hospitals must successfully undergo the full evaluation process again to retain accreditation, irrespective of accreditation type. Not all hospital accreditations are successful, however. Why hospitals fail to achieve hospital accreditation was not well understood. For unsuccessful hospitals, even less was known about the combination of factors associated with accreditation failure. Thus, in this study, I sought to understand if

hospital factors, through a modified structure-process-outcome theoretical framework, predicted the likelihood of failed hospital accreditation.

Private, nonprofit accreditors comprise the largest group of healthcare accreditors in the United States. The Joint Commission (TJC; 2022a) is the accreditor with the longest history and largest market share of the regulatory accreditation market. Nonregulatory hospital accreditors are also predominately private, nonprofit organizations. Accreditation programs for hospitals include profession-based and industry-based standard setting organizations. Profession-based specialty programs include the American Nurses Credentialing Center (ANCC), the American Association of Critical-Care Nurses (AACN), and the Academy of Medical-Surgical Nurses (AMSN). Industry-based standards include the National Institute for Standards and Technology (Baldridge Award) and International Standards Organizations (ISO).

Major social change implications of this study build on findings identified in a seminal research study on patient harm in hospitals, released in 2000 by the Institutes of Medicine. In their groundbreaking study, *To Err is Human*: *Building a Safer Health System*, the Institute of Medicine (2000) published several major findings that changed the landscape of hospital care and healthcare research priorities. These findings revealed errors were common, costly, and involved with systems that can contribute to harm; however, safety can be improved (Bates & Singh, 2018). With improved safety comes cost savings for patients and payors. Cost savings means more money may be allocated to other societal and community needs. In this study, I explored factors of hospital accreditation as a vehicle to impact quality and safety, thus improving society.

Chapter 1 provides information about the background of hospital accreditation in the United States, factors associated with hospital accreditation, and the need to understand if these factors may predict accreditation. I provide problem and purpose statements, research questions, a theoretical framework, definitions, the scope and limitations, and the study's significance.

Background

Patients are unintentionally harmed in hospitals every day. Since the Institute of Medicine's (IOM) (2000) report on hospitals *To Err is Human* was published, more recent studies from the decades that followed generally agreed that preventable deaths remain in the thousands. However, more scrutiny of these study methodologies has been reported, including how to count preventable deaths. For example, Makary and Daniel (2016) estimated preventable 2013 U.S. deaths (251,454) from medical errors using extrapolation methods from four peer-reviewed studies. However, Shojania and Dixon-Woods (2017) suggested the methods used by Makary and Daniel were based on previous studies examining prevalence harm, not mortality rates. Additionally, patient safety indicators are inherently problematic for estimating mortality due to confounders (Shojania & Dixon-Woods, 2017). In one example cited, *C.Difficile* infections had significantly higher baseline death risk as compared to patients without this preventable hospital-acquired condition (HAC; 8% vs 1.8%; Forster et al., 2012). Because a patient's underlying disease makes them a higher risk for HACs, it is difficult to conclude whether the death was attributable to the preventable HAC or the underlying disease state itself. However, researchers have supported that while wide variations were found

in these studies, avoidable harm in hospitals continued. Therefore, policy makers, researchers, and health economists have continued to study hospital deaths and associated quality improvement systems like accreditation.

Hospital accreditation is a tool for quality improvement designed to support the transfer of knowledge, evaluation of quality gaps, and as a quality marker to consumers. Mitchell et al. (2020) and Araujo et al. (2020) found that accreditation is accepted worldwide as a knowledge transfer process. Organizations have used accreditation to improve their processes through the knowledge transfer of the latest standards, with the goal of improving clinical outcomes (Mitchell et al., 2020). An accreditation self-assessment process is often used to evaluate quality gaps in practice standards and to improve knowledge transfer where there may be less than ideal uptake. Additionally, accreditation had been used more recently as a quality assurance marker to healthcare consumers through public data reporting (Schmaltz et al., 2011). Even with widespread global adoption of accreditation by payors, regulators, and health systems, as the gold standard for quality improvement, emerging data have suggested that further study was needed on the reasons hospitals sought accreditation and how they achieved it.

Further studies are needed to understand whether quality and safety outcomes are the results of the accrediting body, accreditation process itself, or other factors. Schmaltz et al. (2011) suggested that hospitals that are privately accredited through the TJC performed better on some hospital quality measures due to adherence to evidence-based practices. Their overall composite score revealed that 69% of never TJC-accredited compared to 83.8% TJC-accredited achieved high performance (90% adherence to

quality measures; *OR* = 2.32, $p < 0.001$). In contrast, Lam et al. (2018) found that even though TJC hospital accreditation had grown nationally and internationally over the past 3 decades, little conclusive evidence could be found to demonstrate the influence or effect of TJC accreditation on 30-day mortality rates (10.2% TJC compared to 10.6% non-TJC, $p = 0.03$, which exceeds the significance threshold $p = 0.0125$ per Bonferroni) or accreditation's influence on quality effectiveness and assurance as measured by medical but not surgical readmissions at 30 days (Medical: TJC 22.4% vs. non-TJC 23.2%, $p < 0.001$; Surgical: TJC 15.9% vs. non-TJC 15.6%, $p = 0.75$).

Hospitals accredited for nursing service excellence programs, such as the ANCC Magnet Recognition Program, have been examined for patient outcomes, and differences were found across quality clinical measures. Dierkas et al. (2021) found that hospitals designated as Magnet-recognized were less likely to be penalized on value-based purchasing (VBP) measures for matched, nonrecognized hospitals (40% compared to 49%). After controlling for hospital characteristics, the odds of VBP penalties for matched, adjusted (*OR* = 0.66, *CI* 95%: 0.48-0.92; $p < .05$) and unmatched adjusted (*OR* = 0.58, 95%: 0.44-0.76; $p < .001$) samples found Magnet hospitals to be statistically lower. However, for hospital readmissions, more Magnet than matched, non-Magnet hospitals were penalized (85% compared to 80%). No statistical significance was found in odds for readmission penalties across any matched or adjusted samples (Dierkas et al., 2021). Inconsistency in research results has not just been in accreditation adoption and the effect on clinical outcomes but in other factors as well.

Economic, cultural, structural, and process factors may play a role in accreditation adoption around the world. Hussein et al. (2021) found a positive accreditation effect in 55% of the 76 studies included in their review in 22 countries from the last 2 decades. Five of the eight economic impact studies (63%) in their review showed a positive relationship with accreditation in cost reduction, share of outpatient revenue, and productivity, but not efficiency. Mansour et al. (2020) reviewed accreditation in low- and middle-income countries and found that hospital accreditation was challenging in countries with limited financial resources. Moreover, Bates and Singh (2018) found differences in systems and cultures of where and how care was delivered. Organizational structures like data collection and electronic health records and outpatient settings of care were cited as primary reasons for inconsistent accreditation adoption.

Additional organizational structural factors associated with quality yet not well understood in accreditation include the influences of hospital size (measured by beds), location, financial status, and quality infrastructure (Dixon-Woods, 2019; Mansour et al., 2020; Wardhani et al., 2019; Zapata-Vanegas & Saturno-Hernandez, 2020). For example, Wardhani et al. (2019) found significant associations ($p < .001$) with hospital size (by beds), ownership type, specialty, number of physician specialists, and accreditation status. Further, Wardhani et al. found larger hospital size (> 51 beds) and ownership status significantly associated with accreditation. Hospitals with 51 to 100 beds (*OR* = 2.399; 95% CI: 1.245-4.622; $p = .009$), 101 to 200 beds (*OR* = 4.397, 95% CI: 1.520-12.717, $p = .006$), and > 200 beds (*OR* = 8.466, 95% CI: 1.246-57.511, $p =$

.029) were more likely to be accredited as compared to hospitals with < 50 beds. Military ownership status (*OR* = 5.093, 95% CI: 1.389-18.677, *p* = .014) was more likely to be accredited as compared to public hospitals. In contrast, Zapata-Vanegas and Saturno-Hernandez (2020) found no significant structural differences in size, complexity, and ownership between accredited and nonaccredited hospitals. They did find significant differences in the processes supporting accreditation in accredited versus nonaccredited hospitals. Significance was found in availability of resources (*OR* = 28.9, 95% CI 3.4-243.3, *p* = .0001), information systems (*OR* = 7.8, 95% CI: 1.6-39.0, *p* = .006), quality improvement skills (*OR* = 13.5, 95% CI: 1.6-112.7, *p* = .004), and stable, mature quality improvement teams (*OR* = 7.8, 95% CI: 1.1-65.8, *p* = .043). These few studies illustrate the need for further exploration to add insights into the field of hospital accreditation research.

Processes are defined as how hospitals meet or maintain accreditation standards. Process measures reported in the literature include leadership styles, empowerment, workplace safety, professional and quality practices, and a culture of innovation and research. Leadership is a key element of accreditation requirements for organizational governance (Al Kuwaiti & Al Muhanna, 2019; TJC, 2022a). Corrêa et al. (2018; β =.70) found that accreditation had a significant, positive correlation to leadership. Empowerment involved work environments with strong personnel management and utilization, including opportunities for professional development, decentralized decision making, and supports for community involvement. Safety policies and procedures and quality practices yielded similar positive yet low correlation results (β =.19; Corrêa et

al., 2018). Lastly, improvement and innovation through research were most closely associated with the organizational culture construct. This construct included “an affective commitment and desire to pursue a course of action with a focus on the target” (Corrêa et al., 2018, p. 3). Organizational culture was highly positively correlated to quality ($\beta = .86$). These results suggested that the process constructs of quality, organizational culture, and leadership are strongly correlated in hospital accreditation. Corrêa et al. suggested that further study was needed in all areas and in particular those with low correlative value such as personnel management and safety and quality policies.

From this introductory review, there was evidence of the widespread desirability and acceptance of hospital accreditation as a management tool. There was also inconsistency in aspects associated with accreditation achievement and related factors such as higher patient quality and safety. Factors such as hospital size, location, ownership, safety culture, and personnel management as related to the adoption of accreditation were less understood. Structure and process differences have influenced accreditation outcomes. Accreditation’s general association to better patient care, risk and cost reduction, and risk management warranted a deeper understanding so that healthcare administrators, policymakers, and regulators may develop strategies that mitigate accreditation adoption failure.

Problem Statement

The problem this study addressed was whether hospital structures and process were predictors of final hospital accreditation. Hospital accreditation has generally wide

and longstanding acceptance as a key quality tool to drive efficient, effective healthcare, but few studies exist on how different hospital structures and processes affect accreditation outcomes. Furthermore, there was a dearth of information on hospitals that failed accreditation. Consequently, factors that influenced hospital accreditation failure were not well understood.

Over the past 20 years, the adoption of hospital accreditation standards and proclaimed improved patient outcomes has been called into question by researchers, governments, and hospitals themselves. Researchers reported that hospital accreditation has been associated with higher quality outcomes and efficiency through adherence to evidence-based standards of care (Dierkas et al., 2018; Schmaltz, 2011). Recent literature had addressed whether accreditation has an impact on quality outcomes or other factors, inferring that better performing hospitals were more likely to seek and therefore receive accreditation (Jha, 2018). Understanding accreditation's impact, or lack of, on quality and costs was important given the amount of societal spending on U.S. health care. In the United States, spending on healthcare, $9,403 mean per capita, was almost double that of peer countries, $5,419 (Papanicolas et al., 2018). Paradoxically, high health care spending had not resulted in better patient outcomes. The U.S. population as compared to peer countries has suffered from much lower rates of life expectancy (80.7 years as compared to 78.6 in the United States) and among the highest rates of preventable hospitalizations (204 per 100,00 discharges for diabetes, only outpaced by Germany with 216 per 100,000 discharges). Additionally, higher rates of chronic disease burden were seen (17.5% chronic burden in peers as compared to 28%

in the United States; Tikkanen & Abrams, 2020). Thus, understanding factors predictive of accreditation are important for society, policymakers, and hospital administrators to identify areas of improvement.

Previous hospital accreditation research has focused on compliance measures, perceptions of quality by patients and providers, variations between accreditor types, clinical outcomes, and patient satisfaction with hospital care (Brubakk et al., 2015; Lam et al., 2018; Mansour et al., 2020; Schmaltz et al., 2011; Stimpfel et al., 2016). However, few studies have addressed the contexts of structural influences (size, location, ownership) and processes (how hospitals demonstrate adoption of accreditation standards of leadership, empowerment, practice, and new knowledge/innovation) on accreditation. Care delivery has occurred in structures and through processes, yet little is known about these associations and accreditation (Wardhani et al., 2019; Zapata-Vanegas & Saturno-Hernandez, 2020). Successful accreditation has generally been associated with more efficient, cost-effective care (Dierkas et al., 2021; Hussein et al., 2021) and that which was better for society. Conversely, hospital structures and processes related to failed accreditation need further study to understand if associations exist between them. The aim of this study, therefore, was to better understand hospital structures and processes that may predict the likelihood of failed hospital accreditation so areas for improvement may be identified and addressed.

Purpose of Study

The purpose of this quantitative study was to examine the effects of hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and

new knowledge/innovation on the likelihood of hospital accreditation failure. The independent variables consisted of three structural variables (hospital size measured by licensed beds; ownership measured by for profit and not-for-profit status; geographic location measured by four U.S. Census Bureau regions, South, Northeast, West, and Midwest) and four process variables (hospital leadership, empowerment, practice, and new knowledge/innovation). All four process variables were measured by my data partner's propriety scoring scale of the level of a hospital's adoption/maintenance of these processes. The dependent variable was hospital accreditation, with 0 = *passing* and 1 = *failing*. I used archival data from a hospital accreditation program to conduct the quantitative analyses.

Research Questions and Hypotheses

The following research questions (RQs) and associated hypotheses guided this study.

RQ1: Was hospital size, ownership status, or geographic location associated with final hospital accreditation status?

$H1_0$: There was no statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

$H1_a$: There was a statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

RQ2: Was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location?

$H2_0$: There was no process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

$H2_a$: There was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

The independent variables were structural variables and process variables. Structural variables were hospital size, ownership status, and geographic location. Process variables were leadership, empowerment, practice, and new knowledge/innovation. The dependent variable was hospital accreditation status (pass/fail). A hospital specialty accreditation program provided archival data for this study. The three hospital structures were defined as hospital size (measured by number of licensed beds), ownership (measured as for-profit or nonprofit ownership), and location (measured by one of four U.S. Census regions: the South, Northeast, West, and Midwest). Hospital structures were self-reported by the accreditation applicant.

Processes were defined as how well hospitals adopted or maintained accreditation standards. Process measures included accreditation standards based in leadership, empowerment, practice, and new knowledge/innovation. These four processes were measured in the archival data by independent reviewers, and each process reported as a composite process score using a proprietary scale. Reviewers determined the level of adoption score by reading the applicant's written narrative and evaluated supportive evidence submitted by the applicant for each accreditation

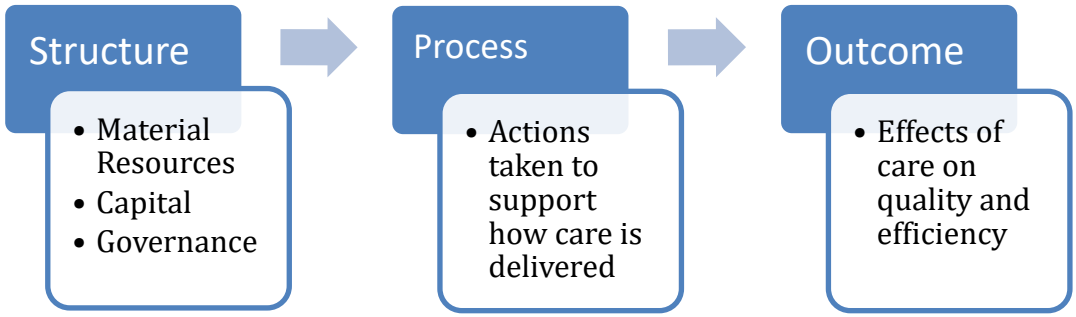
standard. All scores for the individual standards were then totaled, and the average composite score was determined under each process measure: leadership, empowerment, practice, and research, resulting in four final composite scores. I discuss the variable descriptions and measurements in further detail in Chapter 3.

Theoretical Framework

The Donabedian model uses the triad of structure, process, and outcomes as a framework to measure and evaluate healthcare quality (Donabedian, 1966). The Donabedian model approaches the evaluation of healthcare quality within this relationship-based triad with the simple construct that strong structures are more likely to result in strong processes, which in turn are more likely to result in good outcomes (Donabedian, 1988). In Donabedian's model, structure refers to the attributes of care settings. Structural attributes include material resources, human capital, and governance (Donabedian, 1988). Process measures include how the healthcare team delivers care and the patient's role in seeking care and compliance with treatment (Donabedian, 1988). Lastly, outcome measures denote the effect and satisfaction of care on patients and communities (Donabedian, 1988; see Figure 1).

Figure 1

Donabedian's Structure, Process, and Outcome Model

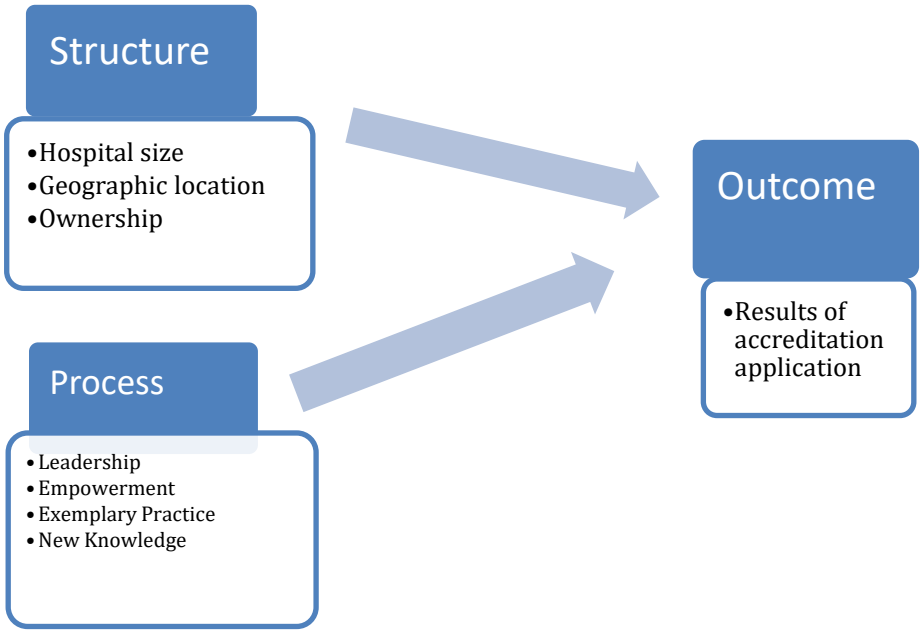


Note. Adapted from "Evaluating the Quality of Medical Care," by A. Donabedian, 1966, *The Milbank Memorial Fund Quarterly*, *44*(3), pp. 166–206 (https://pubmed.ncbi.nlm.nih.gov/5338568/).

I applied a modified Donabedian quality model to the RQs by identifying hospital size, geographic location, and ownership status as hospital structures, and leadership, empowerment, practice, and new knowledge as hospital processes, and accreditation result as the outcome. The Donabedian model provides a theoretical basis for the research plan (see Figure 2).

Figure 2

Hypothesized Research Model Within Structure, Process, Outcome Alignment to Hospital Accreditation Standards



Note. Adapted from "The Quality of Care. How Can it be Assessed?" by A. Donabedian, 1988, *Journal of the American Medical Association*, *260*(12), pp. 1743–1748 (https://doi.org/10.1001/jama.260.12.1743).

The Donabedian model was a rational theory for this study because the same structure, process, and outcome basis of the hospital accreditation program's data, used in this study's analyses, was also associated with the Donabedian model. The hospital specialty accreditation program required that structures were reported, including hospital size (by beds), geographic location (by census region), ownership status, teaching

affiliation, and presence of collective bargaining. The process requirements were found in four components that comprise the accreditation program's model: (a) transformational leadership (IV leadership), (b) structural empowerment (IV empowerment), (c) exemplary practice (IV practice), (d) new knowledge, innovation and improvement (IV new knowledge/innovation; see ANCC, 2017). Accreditation standards under each component drove organizational transformation through the application and adoption of processes, including major concepts of leadership, shared decision making, interprofessional collaboration, support for education, empowerment, practice and quality, and innovation. The outcome for this study was measured as hospital accreditation status (pass/fail). Testing structures and processes of accreditation adoption by hospitals, using the structure, process, and outcome components of the Donabedian model, was rational and logical because the accreditation program was founded on Donabedian. I discuss this concept further in Chapter 2.

The Donabedian model has been used and adapted extensively in healthcare quality studies and in studies outside of healthcare including in education, financial sectors, hospital cleanliness, youth foster care, and quality systems. I discuss these examples in Chapter 2. Donabedian's outcome of quality patient care has been applied in previous decades of research associating achievement of hospital specialty accreditation with quality outcomes (Harolds & Miller, 2020; Silber et al., 2016; Spaulding et al., 2020; Tai & Bame, 2017). Because patient care quality and outcomes have been well-established in previous studies, they were excluded from my research plan. In my study, the original Donabedian model definition of outcome as quality care

was more broadly defined to be the outcome of hospital accreditation. Additionally, structures and processes of my research were hypothesized to have an individual association to accreditation outcomes (see Figure 2), not solely through a linear model of structure→process→outcome.

Nature of the Study

This quantitative study used a cross-sectional study design, multivariable logistic regression, with archival data collected from U.S. hospitals that applied for a hospital specialty accreditation program. Data on the three hospital structures and four hospital processes were obtained from each hospital's application for the hospital accreditation program. The timeline for archival data used in this study was 2015 to 2020. Any applications received after COVID-19 pandemic was declared in the United States (March 13, 2020) were excluded from the sample to reduce spurious variables that may have influenced the applicant's accreditation outcome. The plan for this study's design was to ascertain the effects of hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and new knowledge/innovation on the likelihood that hospitals failed accreditation. The Donabedian model provided the theoretical framework. The rationale for using the Donabedian model was due to the association of the accreditation program's own structure, process, and outcome model aligned with the Donabedian model.

The seven independent variables were hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and new knowledge/innovation. The dichotomous dependent variable was accreditation status.

The primary analytical strategy for this study was multivariable logistic regression, using SPSS for statistical data analyses.

Definitions

Accreditation: Systematic evaluation of a healthcare organization against accepted standards (Araujo et al., 2020; Hussein et al., 2021). The terms accreditation and credential were used interchangeably in this study.

Accreditation status: A dependent variable in this study. Decision by the accreditation body to award or deny accreditation based on systematic evaluation against accepted standards (Araujo et al., 2020; Hussein et al., 2021). All U.S. organizations applying and evaluated for a hospital specialty accreditation from 2015 through February 2020 were included in the sample. Used interchangeably with outcome. Coding for *passing accreditation* = 0, *failing accreditation* = 1.

Empowerment: An independent variable in this study. Leadership activities, using sufficient resources, to support adoption of systems and policies to achieve organizational goals, measured on a proprietary scale (see ANCC, 2017).

Healthcare quality: "The degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (see McInerny & Sachdeva, 2013, p. S7).

Hospital size: An independent variable in this study. Measured by the number of beds licensed under the state regulatory body and as reported by the applicant organization (see ANCC, 2017).

Leadership: An independent variable in this study. Measured by the quality of the transformational leadership style adopted within the health care organization, on a proprietary scale (see ANCC, 2017).

Location: An independent variable in this study. Geographic location of hospital based on U.S. Census Bureau regions (U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, n.d.). Regions include 1= *Northeast*, 2 = *South*, 3 = *Midwest*, and 4 = *West*.

New knowledge/innovation: An independent variable in this study. A complex and dynamic social process with the intention to improve value (see Chaves et al., 2021). Measured by the adoption of evidence- and research-based practice and innovation within the health care organization, on a proprietary scale (see ANCC, 2017).

Outcome: Result of the structure and process measures in evaluation of an applicant's accreditation application for a hospital specialty accreditation. Coding for *passing accreditation* = 0, *failing accreditation* = 1.

Ownership status: An independent variable in this study. For-profit hospitals are owned by shareholders, and the primary focus is maximizing shareholder wealth. Not-for-profit hospitals are charitable organizations, tax-exempt, and the primary focus is providing community benefit (Ramamonjiarvielo et al., 2020). Measured as 1 = *for-profit* and 0 = *not-for-profit*.

Practice: An independent variable in this study. The autonomous nursing and collaborative care of all persons: promotion of health, prevention of illness, advocacy, research, policy, and provision of education (see Bartz, 2010). Measured by the adoption

of professional models of care, autonomy, interprofessional relationships, quality of care, ethics, and quality improvement, on a proprietary scale (see ANCC, 2017).

Process: Application and adoption of concepts associated with accreditation within the applicant organization (see ANCC, 2017).

Structures: Hospital size, ownership status, and geographic location (see ANCC, 2017).

Assumptions

Three assumptions were associated with the study. The first assumption was that the hospital specialty accreditation program accurately identified hospitals that met published accreditation standards and, via expert reviewers, received accreditation. Decisions about whether the organization achieved the accreditation were made through a peer-reviewed and quality-controlled process. Further, the accreditation program is International Standards Organization 9001:2015 certified, which demonstrates that its quality management system consistently drove the provision of products and services that meet customer requirements. The second assumption was that healthcare organizations submitted applications to the accreditation program with the intent to become accredited rather than use the appraisal as solely an assessment of quality structures and processes led by nursing services. The third assumption was that the three self-reported hospital structures (size, location, ownership status) used in this study were accurately reported by the applicant hospitals. Deidentified, self-reported data did not allow for validation with external sources but deidentification protects privacy of

applicants. These assumptions were necessary in the context of the study because they were plausible based on review of the literature but unprovable.

Scope and Delimitations

This study had several delimitations and a limited date and topical scope. The study period was limited to 2015 to 2020 due to unknown confounding effects on applicant success related to the COVID-19 pandemic declared in March 2020. The study was the first of its kind to include all results for the archival data applicants, not just those who passed accreditation as reported in previous studies. This was an important first of its kind study to understand all applicants' journeys through the hospital accreditation structures and processes and if the independent variables were predictive of final hospital accreditation.

Purposive sampling methods limited participants to all accreditation applicants from the partner organization, which may not be representative of hospitals applying for other types of accreditation programs. This type of nonprobability sampling bias limited generalizability of findings to hospitals applying for this particular hospital specialty accreditation program.

Finally, the scope of this study was limited to examining three structural factors: hospital size, ownership, and geographic location; and four process factors: hospital leadership, empowerment, practice, and new knowledge/innovation. Process variables added context to the structural factors as structure alone was unlikely to best predict accreditation outcomes. I did not consider other factors such as market share, services or specialties offered, care delivery models, or patient outcomes.

Limitations

There were several limitations to this study. The nature of this study and predictive design limits interpretation to association, not causation (see Creswell, 2014). There was a potential for researcher bias because I used archival data from a company where I am employed. To address this, a third party accessed the dataset and de-identified the entire sample prior to my use. Those de-identified data were used and results reported in the aggregate. Lastly, permission to use these archival data was secured through the executive responsible for credentialing research who had no relationship to my study or work as a doctoral student.

Significance

This study was conducted to examine the effects of hospital structural factors and process factors on the likelihood of failing the hospital specialty accreditation program. The findings can inform healthcare leaders of the likelihood of failing hospital accreditation, considering hospital structures and the processes through which care is delivered and managed. A better understanding of structures and processes related to final accreditation can inform policy- and decision-makers if associations exist between them. Understanding hospital factors predictive of accreditation failure can help hospitals, governments, and payors directly address strategies that could influence a successful accreditation outcome. This study aimed to provide the first evidence of the effects of organizational structures, their processes, and likelihood of failing accreditation. Only successful applicants were known to the public. Because the factors

for hospitals failing accreditation were unknown, this study provided the first-ever research inclusive of data for both passing and failing accreditation applicants.

One strategic factor hospital administrators use to decide about pursuing hospital accreditation is comparing themselves to successfully accredited hospitals. Because currently accredited organizations within my archival dataset are publicly known by name, location, and the number of consecutive accreditation terms, healthcare leaders, particularly nurse executives, may make assumptions on what it takes to achieve accreditation simply based on assumptions of those who have been successful to date. What was unknown were the characteristics of applicant hospitals and what factors resulted in failures. Failures included two basic types: those who applied and later voluntarily withdrew or hospitals that applied and failed to meet the passing score thresholds for the standards. Withdrawals occurred for various reasons, such as the inability to meet accreditation standards, including data requirements, lack of funding, change in leadership strategy or direction, and voluntary withdrawal due to the inability to address deficiencies in a rewrite request. Failures occur when the organization was unable to meet the level of excellence scores required to progress through the accreditation.

Societal changes may be positively impacted through accreditation, given the plausible positive effect of hospital accreditation on hospital structures and processes. Society may benefit through accreditation's association to lower hospital and healthcare costs and higher quality processes, all of which are associated with healthier communities. Lower healthcare costs provide more local funding to invest in schools

and social programs. Patients may benefit from better quality care that evidence suggested occurs in certain accredited hospitals; however, patient outcomes were outside the scope of this study. Nurses and other healthcare providers may benefit from practicing in hospitals that, through accreditation, provide more autonomy, resources for nursing professional development, education, and higher expectations and practice standards, which may lead to innovations in care delivery.

Summary

Hospital accreditation is a quality improvement tool used by hospital leaders and required by regulators that may improve healthcare quality results. Regulators, the public, and payors have sought accredited hospitals through their trust in accreditation as a marker of quality. Hospitals have publicly reported successful accreditations to enhance their reputation and market share. Public reporting is important due to the positive experiences that patients report. Accreditation programs vary in size and scope, and often include common processes to evaluate and accredit health care organizations through peer-reviewed appraisal of structures, processes, and outcomes associated with healthcare excellence.

Payors and societies have placed their trust in hospital accreditation; therefore, how hospitals fail accreditation warranted additional exploration through a study of factors that have influenced the accreditation outcome. Using the theoretical framework that strong structures and strong processes each may result in strong outcomes, I sought to examine if a process factor was significantly predictive of final hospital accreditation, after controlling for the structures of hospital size, ownership status, and geographic

location. Chapter 2 further explores existing accreditation literature by type and scope, the Donabedian model, and the accreditation program types.

Chapter 2: Literature Review

Hospital accreditation is a quality tool used in healthcare for decades. Hospital administrators, leaders, politicians, governments, and the public believe accreditation to be a proven, consistent, evidence-based process that improves patient care (Araujo et al., 2020; Hussein et al., 2021; Lam et al., 2018, Petrovic et al., 2018). Only in recent years have payors, researchers, insurers, and quality experts begun to question why accredited hospitals' quality and patient care have not improved at a more rapid pace. Researchers who have studied outcomes of a variety of hospital accreditation types reported variable results for the accreditation effect on quality, cost savings, and patient outcomes (Araujo et al., 2020; Brubakk et al., 2015; Hussein et al., 2021; Wardhani et al., 2019). Despite variable results on whether hospital accreditations ultimately improve patient care, hospital accreditation overall as a quality tool has remained the gold standard. Research was needed to explore predictors of hospital accreditation.

Relevance and History of Problem

Researchers have acknowledged variable findings across the spectrum of accreditation research. Factors have included inconclusive evidence of causality, potential for confounders, variation in accreditation program scopes and types, the observational nature of studies, and diversity in hospital characteristics (Hussein et al., 2021; Wardhani et al., 2019). Hussein et al. (2021) also observed that variability in accreditation evidence did not necessarily mean a lack of accreditation effect. Their systematic review of the hospital accreditation literature from the past 20 years indicated

a generally positive accreditation effect on hospital processes, efficiency, safety culture, and patient stays.

Researchers have also reported mixed but mostly positive findings in accreditation research for patient outcomes, performance measures, and economic outcomes. Lam et al. (2018) found patient outcomes in Joint Commission accredited hospitals to have a lower 30-day mortality rate as compared to the state-surveyed hospitals (10.2% compared to 10.6%, $p = .03$) Likewise, Schmaltz et al. (2011) found performance measures were the most often studied and showed mostly positive affects for heart failure, acute myocardial infarction, and pneumonia. Only one randomized-controlled study was found by Schmaltz et al. (2011) on performance measures, but the quality of its design was not generalizable.

Eight studies in the Hussein et al. (2021) review included economic outcomes and accreditation. Most showed significant positive effects in hospital cost reduction but not efficiency. For example, Halasa et al. (2015) studied four Jordanian hospitals and used return to Intensive Care Unit (ICU) as an economic measure due to the high costs of intensive care. These scholars found that lower return rates to the ICU equated to better care. Accredited hospitals experienced a 0.82% ($p < .001$) return rate compared to nonaccredited hospitals at a 1.33 to 2.15% return rate. Accredited hospitals were estimated to experience a $56,595 cost saving per hospital incident per year. When evaluating accreditation and efficiency, Saquetto and Araujo (2019) found a significant negative impact for accredited private hospitals, under a variable return state of efficiency measurement (-0.120, $p = .000$). The authors posited that accreditation

contributes to lower levels of efficiency initially, but efficiencies may be gained over time. Together, these studies demonstrated that variation exists on the clinical outcomes, efficiency impacts, effectiveness of hospital accreditations, and associated economic factors (Araujo et al., 2020; Brubakk et al., 2015; Hussein et al., 2021; Petrovic et al., 2018; Wardhani et al., 2019). Collectively, researchers agreed that further study was needed on factors associated with hospital accreditation due to accreditation's wide acceptance as a quality tool with plausible positive effects.

Preview of Chapter 2

In Chapter 1, I provided an overview of the background and rationale for this study. Chapter 2 explores the current literature on hospital accreditation. I present a description of the search process, time period, and scope. Next, the theoretical foundation (the Donabedian model) supporting the research design is provided. The literature on U.S. hospital accreditation and hospital nursing accreditation is presented, concluding with what is known and unknown about them in the literature, and how they tie to the RQs to address gaps in current literature. Finally, the major themes are summarized, and the selected research methods are further described in Chapter 3.

Literature Search Strategy

I used the following library databases and search engines for this literature review: CINAHL & MEDLINE, CINAHL Plus with Full Text, Embase, ProQuest, EBSCO, Ovid, and ScienceDirect. Key words were as follows: *hospital accreditation, quality improvement, Donabedian*, and *hospitals*. The initial search yielded the following results: Hospital accreditation (7,554 results); quality improvement (347,358);

Donabedian (2,629); and hospitals (10,015,034). I then limited my searches to peer-reviewed articles in health and social sciences databases from 2015 to present: Hospital accreditation (2,415); quality improvement with the filter healthcare added (53,335); Donabedian (1,534). I eliminated the search term hospitals because the other terms yielded higher quality results. The inclusion criteria for later searches were as follows: (a) health care related articles; (b) nursing related articles; (c) English language. One book and four government studies were included. The evaluation included published scholarly literature on key words and study variables. Scholarly literature on hospital accreditation types was found primarily from an accreditor's own authored works. More recent literature was found in quality and medical journals where the question of hospital accreditation value had been raised more recently. Scholarly works on voluntary hospital accreditation were predominately found in the nursing and nursing quality literature because most voluntary hospital accreditations were based on nursing practice. Finally, limited scholarly literature on structure-process-outcome measures was found more broadly distributed in the social sciences, including education, financial, and social care journals.

Theoretical Framework

The Donabedian model provides a comprehensive model to evaluate quality health care through three related constructs: structure, process, and outcomes (Donabedian, 1966). In Donabedian's model, structure refers to the attributes of care settings. Structural attributes include material resources, human capital, and governance (Donabedian, 1988). Process measures include how care is delivered by the healthcare

team and the patient's role in seeking care and compliance with treatment (Donabedian, 1988). Lastly, outcome measures denote the effect and satisfaction of care on patients and communities (Donabedian, 1988; see Figure 1).

Major Theoretical Propositions of the Model

The Donabedian model is one approach to quality improvement measurement. It serves as a framework to classify equally important, interrelated facets in healthcare delivery. Quality improvement is primarily an administrative lever used to monitor performance. Afterall, healthcare is complex by the very nature of health, lag of diagnoses, how quality improvement is instituted, and the variability of how it is measured. Donabedian acknowledged that the intricacies of measuring quality in a complicated social structure such as healthcare must be continually evaluated.

Donabedian recognized the complexity of healthcare in both his seminal work and later writings. The constraints within the Donabedian structure, process, and outcome model included the complexity of healthcare delivery, multifaceted aspects of care, and subjective nature of what quality is, depending on one's perspective. In later writings, Donabedian (1988) suggested that healthcare quality can be assessed in a more nuanced blend of behavioral and healthcare sciences. He later linked quality within the scientific contexts of management and governance, practitioner performance, and patient and social preferences (Donabedian, 1988). Within the triad of structures, processes, and outcomes, Donabedian organized into three interrelated parts: the behavioral, interpersonal, and technical aspects of healthcare sciences in healthcare quality assessments. These three aspects are important to consider when evaluating the

associations between any structure, process, and outcome analysis. The original Donabedian model is illustrated in Figure 1.

Value of Care in Context of Quality

Donabedian highlighted the importance of the valuation of care in the assessment of healthcare quality. He introduced the question of whether costs should be included in the definition of quality and how quality was measured (Donabedian, 1988). Measurement has an important linkage to accreditation as a quality tool to evaluate, incentivize, and standardize health care delivery. Here, Donabedian introduced the concepts of quality and inefficiency. Quality was judged to be the degree to which expected improvements can be attained. Inefficiency was the way those improvements were attained in a needlessly costly method (Donabedian, 1988). A complicated aspect arises, Donabedian posited, when third parties such as insurers or governments specified what they were willing to pay to achieve some level of quality. Governments and insurers often require accreditation as a measure of quality and its associated costs. I further expand on this idea under the VBP and quality section.

The Application of Donabedian's Model in Previous Studies

Donabedian's model of healthcare improvement for patients has been used to study hospital structures, processes, and outcomes ranging from clinical outcomes, patient experience, nursing care environment, the nursing process, and nonhealthcare topics. Next, I review how Donabedian's model has been applied in research on health and related environments.

Application in Healthcare-Related Nursing Research

Nurse work environments have been studied using the Donabedian model and has been shown to be an effective theory in this application. Paguio et al. (2020) conducted a systematic review of published articles from 2008 to 2019 on work environment interventions for nurses. The researchers used the Donabedian model to examine the structures and process interventions to improve the nurses' work environment. Interventions were categorized into three main groups (nurse education, accreditation, and participation) focused on improving structure and process components of the work environment. The authors grouped the interventions following Donabedian's model of structures and process. The authors then evaluated which interventions showed significance across nine outcome dimensions. The authors used patient and workforce measures as outcomes, which is a modification to Donabedian's patient and population outcome definition. Nurse work environment overall showed two studies with significance. Similarly, Gardner et al. (2009) showed improvement in nurse survey ($p < 0.05$), and Hall et al. (2008) showed improvement in nurses' perceptions of work quality ($p = 0.0214$). Thus, the Donabedian model has shown applicability to the nurse work environment and has extended to include patient experience.

Researchers have used the Donabedian model as a theoretical framework in research on patients' hospital experiences. Stimpfel et al. (2016) used 2010 data from 212 Magnet-recognized hospitals matched with 212 non-Magnets using propensity scoring methods to create similar comparison groups. Additionally, the authors used 11 covariates in the matching, including total bed size, ownership, and location (micro and

metropolitan statistical areas by the U.S. Census Bureau). Patient experience scores were measured using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. Post matching results showed the largest Magnet effect with statistical significance in HCAHPS scores for the following patient survey questions: Patients rating hospital 9 or 10 ($p < .001$), patients would definitely recommend ($p < .001$), and staff gave patients discharge information ($p < .001$). Three additional questions showed significance at $p < .05$: Nurses communicated well, pain was controlled, and staff explained medications. The researchers suggested the Magnet accreditation processes of innovation, evidence-based, patient-centered care, and a collaborative culture were likely associated with their findings. One identified confounder was the lack of control for hospitals in their sample that may have applied for Magnet status and failed. Failed hospitals are not publicly reported by the Magnet Recognition Program, so little is known about them external to the Magnet program office.

Kutney-Lee et al. (2014) also studied patient experience using the Donabedian model. They compared patient experience ratings using 2008 HCAHPS surveys for patients treated in Catholic-affiliated and non-Catholic-affiliated hospitals across the United States. Donabedian's framework was used to evaluate how the structural characteristic of Catholic affiliation might affect patients' satisfaction results. Their hypothesis was that the interpersonal aspects of the HCAHPS survey would yield more favorable responses from patients cared for in hospitals supported by the Catholic church. Similar to Stimpfel et al. (2016), statistical significance was found in HCAHPS

for how the patient would rate the hospital ($p < .001$) and definitely recommend the hospital ($p < .001$). The authors included three hospital structural characteristics: bed size, geographic location, and ownership.

These studies demonstrated the application of the Donabedian model measuring quality improvement through researcher-defined structure, process, and outcome measures. Strengths of using the Donabedian model in these studies included statistically significant findings supporting the linkages to the structure-process-outcome constructs. Linkages to accreditation processes and structural measures were also noted, which supported the applicability of Donabedian's model and further affirmed quality outcome measures suggested by the noted research findings. Researchers identified weaknesses primarily in the study designs, which did not support causality, but a presence or absence of associations. Similarly, limitations noted across the studies included observational study design, limited causality, unmeasured variables that could account for the results, and respondent bias. Despite these limitations, most researchers described methods to overcome selection differences and create similar comparison groups as applicable.

Donabedian Model in Summary

Since Donabedian's model was published in 1966, it had become the most widely used healthcare improvement framework in 50 years (Hines et al., 2020). The Donabedian model has continued to demonstrate reliability and validity within healthcare and healthcare quality. Healthcare literature has been built on years of research stemming from the Donabedian model, including applications outside

healthcare. Outside healthcare, the theory was not well known, and researchers adapted structure-process-outcomes as a model to explain associations and their outcomes. The origins of hospital accreditation for the two major hospital accreditors and their relationship to hospital costs, as an incentive to seek accreditation, is reviewed next.

Literature Review – Hospital Accreditation

U.S. Hospital Accreditation: Overview

The history of hospital accreditation in the United States dates to the mid-20th century in response to needed standardization in healthcare structures such as hospitals and healthcare processes defined as activities to support the care of patients. The work in the American College of Surgeons in 1913 was a major influence in determining minimum standards in hospitals and creating an accreditation process. By the 1950s, the number and complexity of hospitals was growing, and three professional organizations joined together to create a new nonprofit organization, then titled the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (Hines, 2020).

Public perceptions about hospital care began to change in the early 2000s. The IOM published *To Err is Human* (2000) and public awareness of quality issues plaguing hospitals was revealed. The follow-up report, *Crossing the Quality Chasm*, was published in 2001, and further delineated the divides between quality care, access to care, and the state of health in America (IOM, 2001). Over the decade that followed this report, legislative actions began to change hospital reimbursement frameworks and quality improvement tools, like accreditation.

A major driver of accreditation adoption is tied to reimbursement. Accreditation is required for hospitals to receive funds from most payors. A significant shift occurred in hospital care payments from rewarding quantity to rewarding quality (Branco et al., 2017) when the 2010 Patient Protection and Affordable Care Act (ACA) passed into law (Chee et al., 2016; Sutter & Park, 2020). The three primary, value-based acute-care hospital programs from the ACA were Hospital VBP, Hospital Readmission Reduction Program, and Hospital-Acquired Condition Reduction Program (Rutter & Park, 2020). All three value-based programs, coupled with the latest iteration of CMS' Bundled Payments for Care Improvement Advanced, underscored the acute care quality versus quantity payor paradigm shift. This shift from provider reimbursement based on the volume of patients seen to reimbursement based on patient care results created a seismic shift in how providers viewed themselves within the larger context of quality and cost programs like VBP.

Hospital Quality and Costs: Drivers of Accreditation Adoption

Drivers of accreditation adoption included health care payment reform measures, such a CMS VBP, and increased health care costs without reciprocal improvements in quality. In the years since the last major reformation of health care policies, researchers found varied improvements in health care quality and safety (Bates & Singh, 2018). Additionally, the CMS reported that the 2017 national health expenditure accounted for 17.9% of U.S. gross domestic product (GDP) or 3.5 trillion dollars (CMS, 2019). The CMS estimated an annual growth rate for 2018–2027 at 5.5%, reaching $6,000,000,000,000 by 2027. At this estimated rate, the burden of healthcare spending

constricted funding for important societal necessities such as education, infrastructure, and social programs (Chee et al., 2016).

CMS is the largest funder of healthcare services in the United States. Approximately 39% of the United States population are enrolled in CMS programs Medicare and Medicaid, however, both programs account for 60% of care provided by hospitals (AHA, 2022). Therefore, the societal impact on hospitalized patients in accredited facilities was significant. Consequently, withholding 1.75–3% reimbursement for care as incentive to be earned back depending on specific measures of performance was the subject of considerable debate (Dierkas et al., 2021). This debate was reflected in research studies on hospital and environmental characteristics that influenced care delivery, quality, and therefore reimbursement, and showed varying results. Chee and colleagues (2016) found early VBP results showed little to no change in clinical processes or patient experience with hospital scores. Rutter and Park (2020) found that hospital size, geographic location, safety net status, teaching status, and patient characteristics influenced VBP reimbursement. Large, urban, teaching, and safety-net designated hospitals were more likely to underperform on VBP and receive associated financial penalties. Conversely, smaller, nonurban, nonteaching hospitals performed better on VBP measures and received fewer penalties. Rutter and Park also found that miscellaneous characteristics positively correlated with at least one VBP measure. Miscellaneous characteristics included centralized hospital systems, ANCC Magnet Recognition Program accreditation, higher nurse per patient staffing, and physician-owned surgical hospitals.

Health care payment reform measures included care providers. Provider payments were rewarded or penalized based on their VBP performance. VBP purchasing is an incentive program, first introduced by CMS in 2012, to support public accountability for quality of and reimbursement to care providers. These quality patient care metrics, often characterized as preventable patient harm events, were designed to improve transparency, safety, and quality hospital care by withholding payments for care then reimbursing hospitals based on specific improvements from baseline, peer-based scores (Branco et al., 2017). Patient harm was associated with quality, and accreditation was a significant tool associated with quality improvement. A recent study by Spaulding et al. (2020), using the Donabedian model, suggested that Magnet-accredited U.S. hospitals outperformed in CMS's recently revised (2017) hospital VBP measures as compared to hospitals without Magnet accreditation. CMS 2017 revisions allocated 25% weight equally across four domains: clinical care, patient- and caregiver-centered experience of care/care coordination, safety and efficiency, and cost reduction (CMS, 2017) resulting in an organization's total performance score (TPS). Spaulding et al (2020) found that Magnet-recognized hospitals, when propensity score matched with non-Magnet hospitals, had higher TPS scores (*regression coefficient*, 2.21; 95% CI, 0.57-3.85), higher process of care scores (*RC*, 8.96; 95% CI, 4.78-13.15), higher patient experience of care scores (*RC*, 4.49; 95% CI, 1.91-7.06), but lower efficiency score (*RC*, −2.47; 95% CI, −4.84 to −0.11).

Padula et al. (2021) found CMS' incentive-based policies, reformed several times over the recent decade, yielded positive results in some areas (patient infections)

yet worsening effects in others (pressure injuries). Dierkas et al. (2021) studied the ANCC Magnet Recognition Program effect and CMS Pay for Performance (P4P) incentive programs. Dierkas et al. evaluated whether Magnet accredited healthcare organizations, known for superior nursing practice environments, were less likely to receive VBP penalties compared to nonaccredited but similar institutions. Like Spaulding et al. (2020), Stimpfel et al. (2016), and Kutney-Lee et al. (2014), Dierkas et al. used propensity-matched scoring to compare similar groups between Magnet and non-Magnet hospitals. The percentage of Magnet and non-Magnet hospitals that received penalties under P4P programs was similar (overall, P4P was 76% vs 78% and hospital-acquired conditions was 30% vs 28%). Dierkas et al. also used hospital characteristics in their study. Their findings suggested that Magnet-accredited hospitals were less likely to be penalized than similar but nonaccredited counterparts. Dierkas et al. concluded the reductions in penalties may offset the expense of pursing accreditation and improving nurse work environments.

Findings from Rutter and Park (2020), and Dierkas et al. (2021) suggested that characteristics of high quality, high staffed nursing environments were positively associated with 25% lower odds of readmission penalties. Additionally, Figueroa et al., (2016) found hospitals with more specialties and accreditations were also more highly penalized than other hospitals. Figueroa et al. hypothesized differences in clinical practices and processes for evaluating adverse events were more thorough, hence more adverse events were identified.

Understanding accreditation, since it can influence care delivery and quality, could have societal and economic impacts. Perceived impacts are critical to healthcare providers, payors, and recipients of care who rely on accreditation as a marker of quality and trust. Hospital accreditation programs, as quality tools, are assumed to improve hospital structures and processes by standardizing approaches to care. If hospital accreditation has demonstrated some positive effect, although inconsistent, further research is needed to help understand the reasons hospitals fail accreditation.

Major U.S. Hospital Accreditation Programs

Key accreditation programs in the United States are TJC and Det Norske Veritas (DNV). TJC is a hospital accreditation program with 80% of the reported U.S. accreditation market share (Lam et al., 2018). Established in 1951, TJC is the largest and oldest accreditor of healthcare organizations and programs in the United States (TJC, 2022a) and meets CMS participation requirements of accreditation. TJC is an independent, not-for-profit organization that also accredits internationally with 609 hospital programs accredited across 65 countries outside the United States (TJC, 2022b). The TJC accreditation process is similar to other hospital accreditors and consists of a review of requirements, assessment of readiness, completion of online application and fee payment, preparation for and participation in the on-site survey and postsurvey activities, and maintenance of survey readiness for the next review in 3 years (TJC, 2022c). Although few other hospital accreditors exist besides TJC, a recent resurgence on hospital accreditation research brought questions to the real value of hospital

accreditation as a factor in quality and safety (Araujo et al., 2020) given associated accreditation costs and outcomes.

DNV is the second major hospital accreditor used to meet regulatory requirements for hospital accreditation in the United States. DNV is a Norwegian-based international company founded in 1864. DNV is organized into six diverse business areas, one of which was U.S. healthcare accreditation. DNV, like TJC, is an accepted accreditation for the regulatory requirements condition of participation with the CMS (DNV, 2022a). DNV has accredited over 600 hospitals in the U.S. since 2008 (DNV, 2022a). DNV processes are comparable to TJC with a fee-based application and on-site survey process that is followed by postsurvey requirements. Successful accreditation results in a 3-year accreditation term (DNV, 2018). DNV conducts annual compliance surveys as compared to triennial TJC surveys for reaccreditation (DNV, 2022a). DNV and TJC combined represent over 90% of the accredited hospitals in the United States. In addition to these accreditations, hospitals may also seek specialty accreditation such as those based on nursing services.

Hospital Specialty Accreditation: Magnet Recognition Program

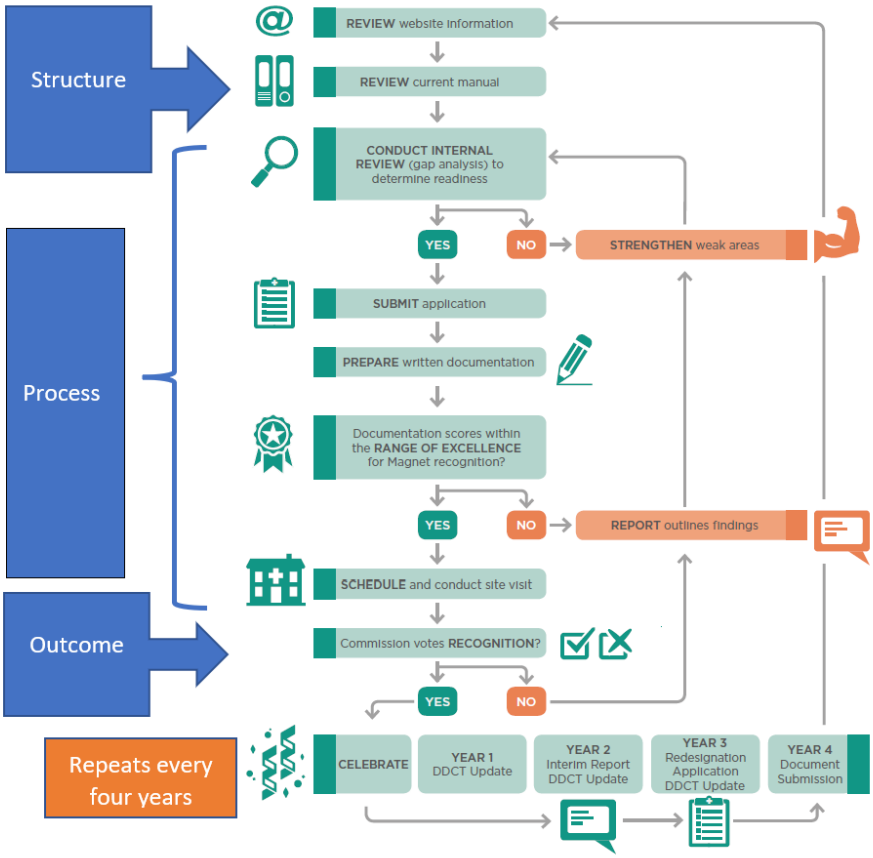
Magnet Recognition Program as a Nursing Accreditation Framework

The Magnet Recognition Program® is a voluntary, organizational, performance-driven accreditation conferred by the ANCC (see ANCC, 2022; Yang et al., 2021). Approximately 576 health care organizations achieved Magnet accreditation as of June 2022 which represents 9.4% of U.S. Hospitals (ANCC, 2022). The Magnet accreditation decision is based on meeting evidence-based standards. If successful, the healthcare

organization is awarded Magnet accreditation for a 4-year, renewable credential term. (see ANCC, 2017). Like other hospital accreditation programs, leaders in healthcare organizations must invest in organizational factors, including registered nurse (RN) staffing, transformational leaders, quality practices, research and innovation, and policies and programs that retain nursing staff to support the likelihood of a successful accreditation (Tai & Bame, 2017). The Magnet accreditation program evaluates applicant healthcare organizations through a rigorous, multiphase appraisal process, which is adapted from Donabedian's structure, process, and outcome framework (see ANCC, 2017; see Figure 3).

Figure 3

Magnet Recognition Program Appraisal Process With Donabedian Model



Note. Structure, Process, Outcomes in blue demonstrate the alignment of the Magnet Program and the organizational and appraisal steps in green and orange. Illustration adapted from the Donabedian Model, 1980. From *2019 Magnet® Application Manual*, p. 72 by American Nurses Credentialing Center. Copyright 2017 by the American Nurses Credentialing Center. Reprinted with permission.

Nursing Accreditation History

The history of nursing accreditation began with a 1980 study examining nurse work environments. Four fellows of the American Academy of Nursing studied

structures and processes in acute care hospitals that differentiated nursing services in factors aligned with nurse retention and recruitment (Clavelle et al., 2012; Poulin, 2017; Tai & Bame, 2017). The impetus for the American Academy of Nursing study related to a long-standing and cyclical nursing shortage in U.S. hospitals in the 1980s (Snavely, 2016). Nursing shortages had been historically studied extensively in academe without identifying one of the root causes of the shortage: nursing turnover (Poulin, 2017). Rather than publish yet another study to validate that demand for nurses exceeded supply, the 1983 researchers took the novel approach of examining structural factors that attracted and retained nurses (Poulin, 2017).

From the 165 hospitals included in the original study, researchers found 41 hospitals had qualities or characteristics that not only retained nurses but attracted nurses "like a magnet," with waiting lists for employment (Clavelle et al., 2012, p. 3). The original qualitative study suggested that 14 structural and process characteristics were consistent amongst the 41 hospitals. These included an emphasis on teaching and professional development, quality nursing leadership, inclusive management style, commitment to quality care and improvement, decentralized organizational structures, and high professional autonomy and decision making (Clavelle et al., 2012; Tai & Bame, 2017).

The four original nurse researchers did not conduct further research on structure and process characteristics. In fact, the seminal study by the nursing fellows was not designed with Donabedian's model. However, as the Magnet program and its standards were created within the 10 years following the seminal study's publication and in

standards refinements since, the Donabedian model became evident through the Magnet model of structure-process-outcome.

Lessons Learned From Magnet's Original Research

The researchers reported that three lessons were learned in the years immediately following the study's publication and supported in the literature since. The first lesson was acknowledging that Magnet accreditation was an organizational achievement, not solely a nursing one (Branco et al., 2017; Tai & Bame, 2017). Although patients were admitted to hospitals for nursing care, nurses relied on other departments and disciplines to contribute to patients' overall care and experience. Secondly, Magnet accreditation was a viable business differentiator. Bond raters considered Magnet accreditation favorable when evaluating hospital bond rating scores (Clavelle et al., 2012). Researchers suggested Magnet accredited hospitals may deliver more cost-effective, less harmful, and higher quality care for patients (Aiken et al., 2018; February & Holmes, 2020; Silber et al., 2016; Stimpfel et al., 2016; Tai & Bame, 2017).

Magnet Program founders also recognized that Magnet status might be transitory (Hamadi et al., 2021) and hypothesized strong leadership commitment was associated with Magnet sustainment. Two factors most likely to contribute to the sustainment or collapse of Magnet characteristics were a change in the chief nursing officer or chief executive officer (Clavelle et al., 2012). These changes addressed the continued importance of executive leaders supporting and sustaining a Magnet-worthy culture. Executive leadership was critical to the successful achievement and sustainment of the Magnet accreditation (see ANCC, 2017; Fields & Jenkins, 2016; Prado-Inzerillo et al.,

2018). Leadership enabled the financial resources that were needed to build the infrastructure to support nurses in their work and retain a highly satisfied nursing workforce. What was unknown were factors associated with hospitals who were unsuccessful in this hospital accreditation program. Data on Magnet accreditation failures has never been made publicly available.

Other Factors Associated With Magnet Accreditation

Tai and Bame (2017) examined hospital characteristics associated with accredited Magnet organizations. Their findings suggested organizational factors such as larger hospital size, nonprofit ownership status, and teaching-affiliated hospitals were significantly associated with successful Magnet achievement (Tai & Bame, 2017). Zapata-Venegas and Saturno-Hernandez (2020) studied contextual factors about and for predicting hospital accreditation success in Columbia, using their own accreditation scheme. Their results indicated that internal contexts (processes) were important factors in predicting accreditation success. Other recent studies examined the Magnet effect on quality, costs, and outcomes but not the characteristics associated with achieving the accreditation itself. Differences may be attributed to the Magnet effect or hospital characteristics themselves (Stimpfel et al., 2016). Without further study on accreditation effects versus other factors, hospital administrators are left without evidence to support or reject the likelihood of successful accreditation.

Challenges in Hospital Accreditation Framework Research

Inconsistency in hospital accreditation research findings supported the need for further study. Understanding characteristics associated with hospital general or specialty

accreditation may provide hospital leaders with the relevant evidence to invest in an evidence-based blueprint, shown to reform work environments, reduce care costs, and retain nurses. The literature included mixed results on the impacts of hospital characteristics such as size, location, teaching status, admission and staffing rates, market competition, and patient factors such as hospital-associated infections, case-mix, and mortality (Araujo et al., 2020; Tai & Bame, 2017; Wardhani et al., 2019). Araujo et al. (2020) also identified barriers of high perceived costs, lack of quality framework, limited staff time to organize, lack of motivation, and leadership focused elsewhere. Implementing an accreditation framework takes significant organizational commitment and hospitals with different characteristics applied and achieved hospital specialty accreditation (Stimpfel et al., 2016). A study is needed that addresses limitations identified in previous studies regarding the ability to control for hospitals that may have applied for accreditation and were unsuccessful. Research on failures would add value to healthcare communities (Stimpfel et al., 2016). I further examined hospital characteristics and their impact on accreditation later in this chapter.

Hospital Structures and Processes

There is a lack of current information that distinguishes hospitals that pass accreditation and hospitals that fail accreditation. The association between hospital structures (bed size, ownership status, and geographic location), hospital processes (leadership, empowerment, practice, and new knowledge/innovation) and achievement of hospital accreditation is not well understood. Scholarly literature primarily included hospital characteristics as observationally reported data. Limited literature is available

on the effect of structure and process variables as predictors of hospital accreditation and no studies are found on accreditation failure. Next, the three structural variables for my study are presented, followed by the four process variables.

Hospital Size

Hospital size, as measured by licensed beds in the facility, has been shown to have an impact on quality. Fareed (2012) conducted a meta-analysis on the impact of hospital size on patient mortality. Fareed found that hospital size was significantly inversely related to mortality ($OR = 0.886$, $p < .001$). The probability of patient mortality in a larger compared to a smaller hospital was 11% less. Fareed noted several significant limitations in the analysis, primarily focused on inconsistencies with statistical reporting (means, standard deviations, standard errors, sample sizes) and lack of uniform data reporting. The article did not provide a definition of the descriptors of large and small sizes. This lack of definition was assumed as one of Fareed's uniform reporting concerns.

Hospital size, as measured by number of beds, was tied to resource capacity and quality (Labrague et al., 2021; Tai & Bame, 2017), and other measures. McFarland et al. (2017) found mixed results when evaluating bed size and patient satisfaction. HCAHPS scores were collected in their study, although the time period was not described. Of note was the inclusion of Magnet accreditation as a variable. McFarland et al. findings show hospital size was significantly associated with patient satisfaction in that larger hospitals had less satisfied patients ($p <.01$), mostly across three areas: receiving help, room cleanliness, and doctor communication (all $p < .001$). Only one dimension with a

positive finding, nurse communication ($p < .001$), was more favorable in larger hospitals. Magnet hospitals were significantly associated with larger sized hospitals ($p < .001$). McFarland et al. (2017) suggested that larger hospitals tend to be in urban areas and have patients with diverse and complex needs. Similarly, Figueroa et al. (2016) found large hospitals were more likely to be in the most penalized group for all three value-based financial incentive programs – Readmissions, Hospital-acquired conditions, and VBP (19.8% compared to 7.7%) as compared to smaller hospitals. What these studies showed was that bed size was a common measure to evaluate quality and accreditation effects.

Location

Geographic location affected factors in healthcare delivery and, by association, accreditation. Those factors included VBP scores which consisted of clinical care, patient experience (satisfaction ratings), safety, and efficiency. McFarland et al. (2017) reported vastly different VBP scores based on location which was reflective of population and density. McFarland et al. found 9 out of 10 of the lowest patient experience scores (63-65%) on the HCAHPS survey in densely populated communities of Washington DC, New York, Maryland, and New Jersey. The highest survey scores (74-75%) were found in Louisiana, South Dakota, Vermont, and Maine (McFarland et al., 2017). Ramamonjiarivelo et al. (2021) suggested location impacted staffing level capacity and labor costs may be higher. Additionally, cost-cutting measures in hospitals may be realized in tight labor markets which may impact quality improvement and therefore funds for accreditation infrastructure. Conversely, Tai and Bame (2017) found

location as an indicator for Magnet-accredited hospitals. Less densely (2,082 residents per square mile) populated areas showed a higher likelihood of Magnets as compared to denser areas (2,482 residents) however this was not significant, (p = .385). This contradicts other studies by Abraham et al. (2011) and McFarland et al. (2017), who showed Magnet-accredited hospitals were more likely to be found in highly competitive labor markets due to Magnet's reputation as excellent nursing environments that attracted nurses for employment.

These studies suggested geographic location may be an important factor in accreditation due to local effects of location on the healthcare marketplace. More densely populated areas, as Ramamaonjiarivelo et al. (2021) suggested, affect hospital costs due to higher wages in urban environments. Higher wages for nurses may result in lower hospital profit margins and therefore less funding for voluntary hospital accreditations. This may be the opposite of what was needed because investment in accreditation supports the retention and recruitment of nurses in highly competitive labor markets. Less densely populated areas had few hospital service competitors; however, labor markets were also limited, and hospitals may spend proportionately more money to recruit and retain staff members.

Ownership: For-Profit and Not-For-Profit

Hospital ownership models differ within the U.S. and around the world. Bjortvan et al. (2018) studied hospital ownership and financing systems in Norwegian hospitals and found that these were important factors in how hospitals operate and what services they provide. Quality, as measured by mortality rates, in relationship to ownership status

was inconclusive. Ramamonjarivelo et al. (2021) studied privatization of public hospitals and the impact on quality. The authors defined privatization as the change from public to private, either for-profit or not-for-profit. In for-profit hospitals, the number of RNs, as the highest line item in operational budgets, was reduced but less educated healthcare members were unchanged. In not-for-profit hospitals, RNs were also lower in number compared to the public status before privatization; however, fewer less educated care providers were kept, thus the overall skill mix of RNs to patients was higher. Ramamonjarivelo et al. suggested quality changes during privatization could be related to the change in number of RNs and the skill mix. Differences in how hospitals with separate ownership models fund and support operations were evident with decisions made on staffing skill mix and type of level of services provided. Whether ownership type made a difference in quality was unclear.

Leadership

Hospital leadership's role in achieving accreditation requirements is an important activity in moving a group toward a common goal. In quality improvement and accreditation, leadership determines the goals, resource allocation, and strategic direction of the organization. Al Kuwaiti and Al Muhanna (2019) found leadership activities such as directing activities, influencing others, and coping with change as key components in hospital accreditation requirements including those requirements for TJC, Joint Commission International, and Accreditation Canada. Leadership was part of the required governance entity for hospitals applying for accreditation. This was due to the legal and fiduciary responsibilities leaders had in setting strategy, approving budgets,

realizing mission and value statements, guiding teams through change, and accountability for policies and procedures (Al Kuwaiti & Al Muhanna, 2019). Algunmyeen et al. (2020) conducted a qualitative study and found four perceived benefits for implementing accreditation including fewer patient complaints and errors, higher quality performance and productivity, higher patient safety, and improved reputation. Foundational to these benefits was the ability of managers to support quality processes through their actions and encouragement of staff. One specific management style shown to support and motivate followers in change activities is transformational leadership.

Transformational leadership has also been studied in implementation science. Farahnak et al. (2019) looked at how both staff and leadership attitudes and behaviors influenced workplace adoption of change. In their study, researchers implemented evidence-based practices in a mental health organization in southern California. Four hypotheses were established to study transformational leadership and leader and employee attitudes toward change, effects of attitudes on implementation success, and employee attitudes as a mediator for transformational leadership and implementation success by employees. Findings suggested employee attitudes toward successful implementation of evidence-based practice were an indirect result of the relationship of transformational leadership. Mosadeghrad and Ghazanfari (2021) built on the importance of leadership in accreditation and found it to be the most important enabler in hospital accreditation. Further, transformational leadership actions such as motivating and empowering change, using participatory leadership, and providing resources and

guidance facilitated accreditation adoption (Mosadeghrad & Ghazanfari, 2021). Therefore, organizations implementing organizational changes, like accreditation, should consider developing transformational leadership activities within their direct leaders.

Empowerment

The process measure of empowerment supports leadership activities that engage hospital employees in ownership of decisions, actions that establish safe policies and evidence-based practices, participation in and record keeping of professional development, mentoring, maintaining records on education levels, and policies and procedures to support nurses' transitions to practice. Algumeeyn (2020) found nurse managers must empower staff to develop quality projects and take active decisions in care. Al Kuwaiti and Al Muhanna (2019) suggested the importance of continuing education activities and investment in training, development, compensation, and rewards may have increased satisfaction and motivation. Increased employee satisfaction and motivation were associated factors in accepting the changes that accreditation brings.

While there was limited literature on empowerment and accreditation effect, the underlying influences of supportive leadership activities, sufficient resources, and sharing decision-making power underpin the need to explore if empowerment is a predictor of likelihood of hospital accreditation success or failure.

Practice

Practice activities in accreditation include activities for care, treatment, professional practice, quality, and quality improvement, and activities that support

evidence-based care delivery systems. Practice is a single term that defines the core of hospital care. Hospital accreditation is closely tied to quality as a management tool to standardize the care and treatment of recipients of care. Important activities that support quality adoption include workplace efficiencies, cost and harm avoidance, professional models of care, and how care is delivered across hospitals of differing sizes, geographic locations, and ownership models. Accreditation is a driver of change including how quality is reimbursed and reported. Since registered nurses had the most direct impact on hospitalized patient care metrics, practice programs to improve the work environment for nurses were critical to positive patient outcomes (Aiken et al., 2018; Silber et al., 2016) and more cost-effective care (Silber et al., 2016; Tai & Bame, 2017). Quality is reported both publicly and internally among hospitals and health care systems. It is a marker of pride and trust from patients receiving care. Practice is an important and core element of hospital care and provides the basis for clinical outcomes and evidence-based standards upon which accreditation is founded.

New Knowledge/Innovation

Innovation is encouraged by hospital accreditors as a method to integrate new and evidence-based practices into care. Innovation reflected a complex and dynamic social process whose intent was to enhance value (Chaves et al., 2021). Both major U.S. accreditors, DNV and TJC, encouraged innovation adoption through application of best practices and quality management systems (Schmidt, et al., 2019). Powers and Sanders (2013) examined hospital environmental and organizational factors associated with innovation adoption. For environmental factors studied, two yielded statistical

significance, environmental complexity defined as geographic location measured as urban or suburban, ($\beta = 1.089$, $p = .033$), and community resources, measured as all health care practitioners per 1,000 county population ($\beta = 0.069$, $p = .003$). Organizational factors also yielded two statistically significant findings, organizational complexity, measured as number of hospital services reported ($\beta = 0.014$, $p < .001$), and control of domain, measured as RN FTEs per bed in operations ($\beta = 0.931$, $p < .001$). Control variables, hospital size, defined by number of beds ($p = .000$) and ownership type, measured by for-profit and not-for-profit ($p = .00676$ to $.008$) also showed statistical significance in all models. Altogether, the researchers suggested adoption of innovation was associated with larger, complex hospitals in urban environments, not-for-profit ownership, and a higher number of nurse FTEs per bed which empowered teams to adopt innovative practices.

Factors associated with hospitals adopting innovation are predicated on accreditors' standards being representative of the latest evidence. However, the frequency on which the accreditor updates evidence for its own standards warrants comment. A recent review of TJC's evidence-base for its new actionable standards, including the level of transparency and availability of the evidence, revealed few cited references and little public access to supporting documents (Ibrahim et al., 2022). The authors questioned whether implementing the new standards would influence safety and quality (Ibrahim et al., 2022). This observation aligns with findings of Lam et al. (2018), Petrovic et al. (2018), and Wardhani et al. (2019) that hospitals with accreditations of various types showed mixed results for quality clinical (infections, mortality) and

utilization (average length of stay) measures, on average. Mixed results further supports that research on innovation warrants further study.

Summary of Literature Review Key Points

In summary, the literature review supports use of the Donabedian model as a valid and reliable framework appropriate and logical for the RQs presented in Chapter 1. The Donabedian model is an appropriate and logical theoretical framework since the accreditation data for this study are associated with structure, process, and outcomes of the Donabedian model. Hospital accreditation programs were primarily associated with regulatory and payor requirements as markers of quality processes. The two major hospital accreditation programs, TJC and DNV, focused on compliance. Recent literature suggested wide variation among accreditation studies associating quality, lower costs, and efficiency with accreditation status. Consequently, how hospitals undergo the accreditation process, what structures and processes were relevant, and what factors may be predictive of accreditation failure were not well known. The Magnet Recognition Program was explored as the longest nursing accreditation program in existence. Studies compared Magnet to non-Magnet accredited hospitals and found differing results for quality measures, patient experience survey scores, when controlling for leadership, size, location, and ownership status, among other factors. In Chapter 3, the research design, methods that align with the RQs, and related hypotheses were discussed and supported to advance knowledge in this discipline.

Chapter 3: Research Method

The purpose of this quantitative study was to examine the effects of hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and new knowledge/innovation as predictors of hospital accreditation failure. This chapter describes the research design and rationale, methodology including population, sampling and sampling procedures, data collection procedures, justification for archival data, reliability and validity of archival data, data analyses, ethical procedures, and concluding summary. Many factors may affect hospital accreditation, but I focused on select hospital structures, hospital processes, and the likelihood of hospital accreditation failure.

Research Design and Rationale

Independent and Dependent Variables

This research study consisted of seven independent variables and one dependent variable. The independent variables included structural and process variables. The three structural variables were hospital size measured by licensed beds, ownership measured by for profit and not-for-profit status, and geographic location measured by four U.S. Census Bureau regions South, Northeast, West, and Midwest (see Figure 1). There were four processes variables (hospital leadership, empowerment, practice, and new knowledge/innovation). Each process variable was measured on a proprietary scale of hospital adoption of these processes. The dependent variable was successful or unsuccessful hospital accreditation.

Research Design, Rationale, and RQs

This quantitative study used a nonexperimental, descriptive cross-sectional study design with archival data collected from U.S. hospitals that applied for a hospital specialty accreditation program. Data on the three hospital structures and four hospital processes were obtained from archival applications from my data partner organization. Each applicant hospital was included once; there were no duplicates. The independent variables were not manipulated. The time constraints for data used in this study was January 2015 to February 2020. Any applications received after the COVID-19 pandemic was declared in the United States, March 13, 2020, were excluded from the sample to reduce spurious variables that may have influenced the applicant's accreditation. The research design choice was consistent with and built on the work of Powers and Sanders (2013) and Tai and Bame (2017). Their studies advanced knowledge on hospital accreditation factors by studying organizational characteristics and likelihood of hospital accreditation.

RQs and Hypotheses

The RQs were as follows:

RQ1: Was hospital size, ownership status, or geographic location associated with final hospital accreditation status?

$H1_0$: There was no statistically significant association between hospital size, ownership status, or geographic location and hospital accreditation.

$H1_a$: There was a statistically significant association between hospital size, ownership status, or geographic location and hospital accreditation.

RQ2: Was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location?

$H2_0$: There was no process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

$H2_a$: There was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

Methodology

Population

The target population was hospitals in the United States who applied for hospital specialty accreditation between January 2015 and March 2020. The total population size was 648 applications during the study period.

Sampling

The sampling method was nonprobabilistic, purposive. Nonprobabilistic, total population sampling was used for this study to answer the RQs. This sampling method was appropriate for the RQs as the sample included all applicants who applied for a hospital specialty accreditation during the study period. Therefore, they were representative of the accreditation phenomenon. The strength of purposive sampling for this study was the ability to include all applicants during the study period, therefore including both successful and failed outcomes. This improved validity and provided

access to a heterogenous sample of all successful and unsuccessful hospital specialty accreditation applicant data that had never been studied. Positional bias was a weakness due to the sampling method. Positional bias exists because the archival dataset was extracted from an existing database at my employer. The data were historical, and even though I indirectly oversee the accreditation program, I did not have any part in accreditation standards or applicant decisions. Although sampling error was reduced with all applicants being included in the dataset, questions about interpretation of the findings may occur.

Sampling Frame

The sample was taken from all U.S. hospitals who met certain inclusion criteria. Inclusion criteria were limited to those who applied for a hospital specialty accreditation during the defined study period. The study period was January 2015 to March 2020. Archival data were used from the accreditor's database. Within the accreditation applicants, inclusion criteria included all hospital applications from all accreditation review cycles during the study period. Applicants applying under either of the two standards manuals in effect during the study period were included. There is an overlap period when the manuals are published where hospitals may choose either for their appraisal. The standards and processes in both manuals were similar so applicants for either were included. The same hospital applying for accreditation re-renewal in a subsequent review cycle during the study time period was excluded. Applicants must have completed at least the first phase of their evaluation and had scores across all domains to be included. Applicants who withdrew their accreditation application during

the study period were included in the sample if they received scores during the first phase of their scored evaluation. A summary is provided in Table 1.

Table 1

Inclusion and Exclusion Criteria for Applicants During the Study Period

Inclusion criteria	Exclusion criteria
1. All applicants under either standards manual in effect during study period	1. Any applicants renewing twice during the study period 2. Applicants withdrawing before Phase 1 scores
2. Applicants with complete Phase 1 scores across all 4 domains	3. Applicants with incomplete Phase 1 scores across any of the 4 domains

Power Analysis

Sample size for this study was determined using the rule of event per variable (EPV). This was an acceptable method for data using multivariable logistic regression (see Bujang et al., 2018; van Smeden et al., 2018) to predict binary outcomes. Multivariable analysis involves estimates that may be hard to determine across many parameters (see Bujang et al., 2018). An a priori power analysis was conducted using an EPV of 50. This EPV level has shown good predictive power for inferential statistics. The aim was to find the minimum sample size that yielded the smallest differences between the sample estimates and the target population. The EPV equation is $n = 100 + 50i$ (see Bujang et al., 2018). In the equation, i is the number of independent variables.

$$n = 100 + 50*7$$

$$n = 100 + 350$$

$n = 450$

The minimum sample size was 450. The number of applicants in the dataset, 648, met this sample size. Alpha α was set at .05 as is customary for social science research and researcher risk of rejecting the null hypothesis when it is true.

The dataset showed imbalance due to the relative rarity of failures compared to passing accreditations; at 96% passes to 4% fails. Using logistic regression can grossly underestimate the probability of rare events such as the number of passes to failed accreditations (see King & Zeng, 2001). To account for logistic regression's small sample bias that may result from the low proportion of failures, choice-based sampling was used. Choice-based sampling is an accepted method to reduce small-sample bias in rare events.

Operationalization and Instrumentation of Archival Data: Recruitment, Participation, and Data Collection

Archival data were used from the hospital specialty accreditor's confidential accreditation database. Permission for deidentified data was requested and received through a doctoral-prepared executive in charge of the data. Data were collected for the structural variables values from entries into the database by applicant organizations. Process variables' consolidated scores were collected from the database entries from entries made by expert appraisers in the accreditation program.

Reliability of Archival Data

Reliability and validity were established through the archival data on the process variables. The archival data's reliability was established through rater reliability. The

appraisers, as subject matter experts, were evaluated using a rater reliability analysis against a gold standard level of accreditation adoption that met expectations for the specialty accreditation standards. Compared to analyzing interrater reliability, the purpose of rater reliability was to establish the consistency of appraiser responses in assessing an applicant's documentation. It provided a more useful process for evaluating appraisal systems, which had two parts:

- accreditation criteria provided to applicants
- how appraisers assigned scores to evaluate applicant documentation

Statistical tests were used to evaluate rater reliability scores. The Gwet AC1 calculation was a combination of reviewer performance and item performance. AC1 was originally introduced by Gwet in 2001. The interpretation of AC1 is similar to generalized kappa as described by Fleiss (1971), which was used to assess interrater reliability of when there are multiple raters. The hospital accreditation program used multiple raters that are not randomly assigned across multiple hospital applications. Gwet demonstrated that AC1 can overcome the limitations that kappa was sensitive to trait prevalence and rater's bias (as cited in Wongpakaran et al., 2013) and was therefore a more robust measure. AC1 benchmarks according to Altman and Landis and Koch were .00 to .20 slight/poor, .21 to .40 fair, .41 to .60 moderate, .61 to .80 good/substantial, and .81 to 1.00 almost perfect/very good (Wongpakaran, 2013). For this study, there were two sets of accreditation standard manuals during the study period. For the first application manual standards, the Gwet AC1 final score was .679, which was good/substantial level of agreement. For the second manual's standards, the Gwet

AC1 was .681, also a good/substantial level of agreement. This level of agreement was important to provide confidence in appraiser scores on the process variables. Additionally, the EPV calculation in the dataset required applicants from both accreditation manuals to meet the sample size minimum of 450 applicants in total.

Operationalization of Variables

Three structural variables (hospital size, location, and ownership status) and four process variables (leadership, empowerment, practice, and new knowledge/innovation) comprised the independent variables. The dependent variable (accreditation status) was a dichotomous variable, pass/fail. No variables were manipulated. The operational definitions of each variable are listed below. A summary of the variable name, type, brief definition, and scale of measurement are found in Tables 1 and 2.

Accreditation status: (dependent variable) Decision by accreditation body to award or deny accreditation based on systematic evaluation against accepted standards (Araujo et al., 2020; Hussein et al., 2021). All U.S. organizations applying and evaluated for the data partner organization's accreditation from 2015 through February 2020 were included in the sample. Coding for *passing accreditation* = 0, *failing accreditation* = 1.

Empowerment: (independent variable): Leadership activities, using sufficient resources, to support adoption of systems and policies to achieve organizational goals, proprietary scale (see ANCC, 2017).

Hospital size: (independent variable) Measured by number of beds licensed under the state regulatory body and as reported by the applicant organization (see ANCC, 2017).

Innovation: (independent variable) A complex and dynamic social process with the intention to improve value (see Chaves et al., 2021). Measured by the adoption of evidence- and research-based practice and innovation within the health care organization on a proprietary scale (see ANCC, 2017).

Leadership: (independent variable) Measured by quality of transformational leadership style adopted within the health care organization on a proprietary scale (see ANCC, 2017).

Location: (independent variable) Geographic location of hospital based on U.S. Census Bureau regions (U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, n.d.). Regions are 1= Northeast, 2 = South, 3 = Midwest, and 4 = West. See Figure 4.

Ownership status: (independent variable) For-profit hospitals were owned by shareholders, and the primary focus was maximizing shareholder wealth. Not-for-profit hospitals were charitable organizations, tax-exempt, and the primary focus was providing community benefit. (Ramamonjiarvielo et al., 2020). Measured as 1 = for-profit and 0 = not-for-profit.

Practice: (independent variable) The autonomous nursing and collaborative care of all persons; promotion of health, prevention of illness, advocacy, research, policy, and provision of education (see Bartz, 2010). Measured by the adoption of professional

models of care, autonomy, interprofessional relationships, quality of care, ethics, and quality improvement on a proprietary scale (see ANCC, 2017).

Table 2

Operationalization of Structural and Process Variables

Structural variables			
Independent variables	Type	Definition	Measurement
Size	Continuous	Number of licensed beds in facility	Number of beds
Location	Nominal	U.S. Census Bureau Region	coded 1 = Northeast, 2 = South, 3 = Midwest, 4 = West
Ownership	Dichotomous		For-profit = 0, nonprofit = 1
Process variables			
Independent variables	Type	Definition	Measurement
Leadership	Continuous	Adoption of transformational leadership, management style	Average score measured to hundredths place, on a proprietary scale
Empowerment	Continuous	Adoption of personnel policies and programs, community, image of nursing, and professional development	Average score measured to hundredths place, on a proprietary scale
Practice	Continuous	Adoption of professional models of care, autonomy, interprofessional relationships, quality of care, ethics, and quality improvement	Average score measured to hundredths place, on a proprietary scale
New knowledge/innovation	Continuous	Adoption of evidence- and research-based practice, innovation	Average score measured to hundredths place, on a proprietary scale

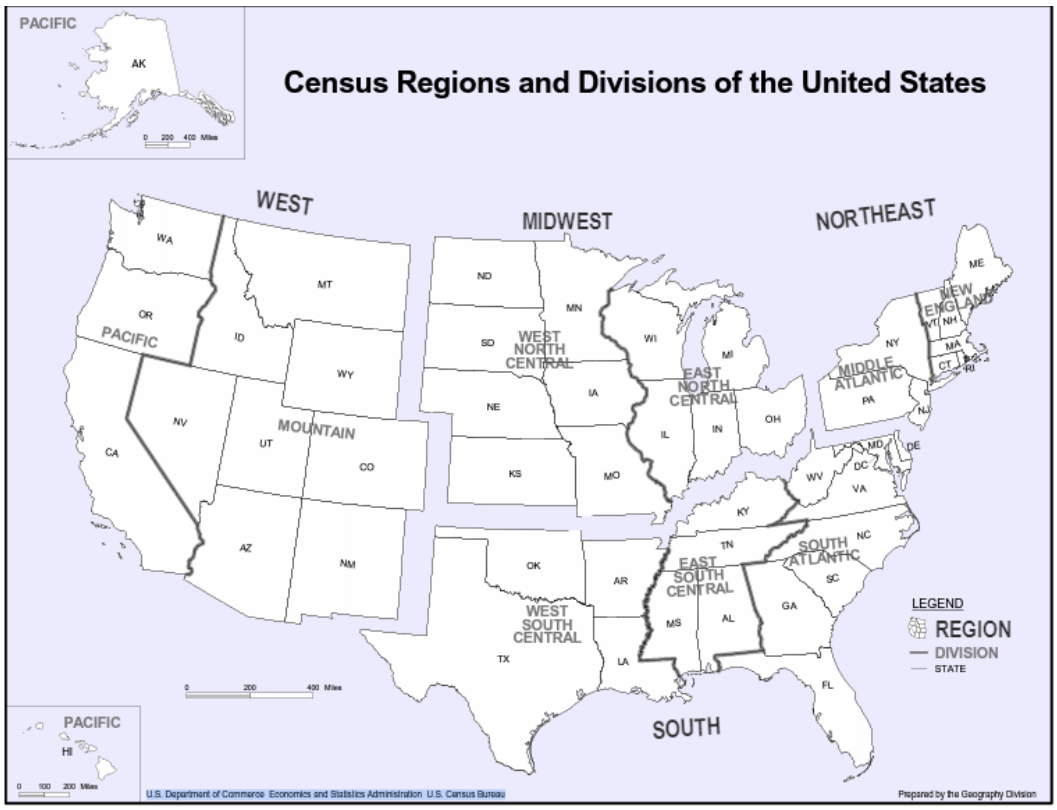
Table 3

Operationalization of Dependent Variable

Dependent variable			
Dependent variable	Type	Definition	Measurement
Hospital accreditation	Dichotomous	Accreditation	Pass = 0, Fail = 1

Figure 4

Census Regions and Divisions of the United States



Note. United States Department of Commerce, Economics and Statistics Administration (n.d.). Map: US Census Regions https://www2.census.gov/geo/pdfs/maps-

data/maps/reference/us_regdiv.pdf. In the public domain.

Accreditation Appraisal Process for the Archival Dataset

Process variable values for my study were collected from archival data from the accreditation appraisal process. Each applicant's accreditation outcome (pass/fail) was determined by the accreditation program following a strict multiphase protocol. First, a team of 3-5 subject matter experts (appraisers) were assigned to individually, then collectively evaluate and score the written narrative and accompanying evidence submitted for each standard by each applicant. The accreditation program provided a proprietary scoring rubric for all phases of appraisal. All applicants whether first-time or renewing accreditation must undergo the same appraisal processes. After the appraisers independently scored each standard, the same team of appraisers reviewed individual scores for disparities. For standards with different scores among the appraisers, consensus was reached for a final 'team score' for each standard. Next, the final scores for each standard were mathematically averaged for a final composite score for each of the four domains. A confidential scoring threshold was determined by the accreditor's governing body for applicants to advance from Phase 1 written response to standards, to Phase 2 validation, and to Phase 3 decision. If any the four domain composite scores were insufficient to advance to the validation phase, the appraisers notified the applicants which standards did not receive a passing score and requested a one-time rewrite for those standards. Applicants had 90 days to respond. In contrast, if the initial review of domain composite scores were sufficient, the organization advanced to the

validation phase. For those with the 90-day rewrite, upon resubmission, the appraisal team rescored the deficient standards by evaluating the new narratives and substantiating evidence. If the new scores were sufficient to raise the related composite score(s), the applicant advanced to Phase 2 validation. If the new scores were insufficient, the applicant was denied accreditation (fail).

During validation phase, the same appraisal team conducted an in-person or virtual visit at the applicant's facility to evaluate what was submitted by the applicant during the earlier appraisal phases. Over 3 to 5 days, the appraisers conducted the validation analysis through qualitative interviews with employees, patients and families, and community stakeholders. The appraisers rescored any standards as needed based on the qualitative review and submitted a final report to the accreditation office. The office analyst conducted a quality check to ensure all aspects of the appraisal process were accurate and complete. The documentation was then advanced to the accreditor's governing body for final deliberation and a consensus decision (pass/fail) was reached based on the applicant's quantitative scores. If the passing scores were not achieved, the governing body denied the applicant.

Data Analysis Plan

Data were analyzed for my study using SPSS v28. The archival data on the independent and dependent variables were extracted for each applicant to an Excel spreadsheet from the accreditation database based on the eligibility criteria for the study period, de-identified, and de-duplicated by a member of the data partner organization. The data were then reviewed by me for any outliers to the eligibility criteria. The

structural variables' location and ownership status were coded accordingly. Location was coded based upon the applicant's U.S. state. Numerical identifiers 1 to 4, randomly chosen, were assigned in accordance with U.S. Census bureau regions: 1 = *Northeast*, 2 = *South*, 3 = *Midwest*, and 4 = *West*. Ownership status was coded 1 = *for-profit*, and 0 = *not-for-profit*. Bed size was the actual number of licensed beds reported by the applicant into the accreditation database.

Process variables' scores were extracted from the accreditation database for each applicant for each of the four domains. The phase of review with full set of scores was used for analysis. This approach ensured that all applicants were evaluated at the same phase in the appraisal process. Any applicants with missing scores in any domain, no matter the phase were discarded from the sample.

RQs and Statistical Tests

The following two RQs and associated hypotheses guided this study.

RQ1: Was hospital size, ownership status, or geographic location associated with final hospital accreditation status?

$H1_0$: There was no statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

$H1_a$: There was a statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

RQ2: Was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location?

$H2_0$: There were no process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

$H2_a$: There were process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

The statistical test used to test the hypothesis was multivariable logistic regression. Multivariable logistic regression was appropriate due to the outcome variable being dichotomous and the presence of multiple independent predictor variables. Several assumptions were associated with the statistical analysis chosen for this study. Assumptions were important to ensure accuracy of the predictions, the fit of the regression model to the dataset, the variation in the dependent variable explained by the independent variable(s), and test my research hypotheses (see Laerd, 2017). The first assumption related to the outcome variable as dichotomous. The outcome or dependent variable was accreditation status with a dichotomous outcome pass or fail accreditation. The second assumption was related to the independent variables being continuous or nominal. All seven structure and process variables met this assumption. The third assumption was independence of observations (no relationships), and the dichotomous dependent variable and nominal independent variable categories were mutually exclusive and exhaustive. An applicant cannot be in both pass and fail accreditation statuses. Additionally, the two nominal independent variable categories were mutually exclusive (an applicant cannot be in both for-profit and nonprofit) and exhaustive

(applicants must be in one of the four census bureau regions as the regions cover the entirety of the U.S.). The fourth assumption was regarding adequacy of sample. The EPV technique I used of 50 cases per independent variable (50*7) and choice-based sampling reduced the effect of SPSS machine learning bias with the imbalanced dataset of pass to outcomes.

The fifth assumption was that a linear relationship must exist between the continuous independent variable (bed size) and the logit transformation of the dependent variable, accreditation status (see Laerd, 2017). A Box-Tidwell test approach was used. Since there was a non-linear relationship with bed size, one method was to apply a transformation to try to establish linearity. The sixth assumption was no multicollinearity can be present in the independent variables. Multicollinearity occurs when two or more independent variables are highly correlated. Correlation coefficients (Pearson r-squared) and variation inflation factor (VIF) were closely evaluated. Since the VIF values were less than 10, no independent variables were correlated thus no assumptions were violated. The final assumption related to outliers in the dataset. Data outliers were anticipated with the relatively high pass to fail dataset and included.

Covariates were included in this study to test the RQs with common variables found in the limited available literature on accreditation and through my expert reasoning. Predictors of accreditation failure were not well known therefore selecting variables for inclusion in the multivariable model provided important information for hospital administrators, researchers, and policy makers. Once the model was fitted with

the seven independent variables (or covariates) all significant and non-significant results were reported since this was the original research design.

Results were interpreted to evaluate if any of the independent variables had a statistically significant effect on the dependent variable and how well the model predicted the dependent variable (see Laerd, 2017). Firstly, I checked the data analysis to see if any cases were missing and that the coding was used where applicable. I evaluated statistical significance of the model (95% CI) and model fit (>.05 is a good fit) (see Laerd, 2017). The Cox and Snell R Square and Nagelkerke R Square values showed how much variation in the dependent variable was explained by the model. Next I evaluated category prediction from the independent variables by evaluating the observed and predicted results. The variables table provided information including statistical significance, *B* coefficients Exp(B) or odds ratios and confidence intervals for each independent variable. The odds ratios provided the change in odds per one unit increase in the independent, continuous variables and change in odds for independent, binary variables.

Threats to Validity

Validity was supported during the accreditation appraisal process by using consensual qualitative research approach for the non-quantitative sections of the accreditation appraisal. In this process, individual appraisers evaluated the applicant documentation and score based on the level of evidence and quality (Hill et al., 2005). Next, the appraisers, at least three per team, came to consensus on the final score for each individual standard throughout the two appraisal phases, using observation and

written evaluations. Construct validity was established as part of the accreditation process by using quantitative analysis of data and qualitative analysis of observational data. Convergent validity was discussed by Lundmark and Hickey (2006), yet no statistical data were provided to support this finding. Finally, external validity was at risk from researcher bias due to purposive sampling. Purposive sampling limits generalizability to hospitals with like characteristics such as those that have applied for the hospital accreditation represented in the data sample. To reduce risk and power bias, I used archival data for a retrospective analysis of accreditation phenomena.

Ethical Procedures

Archival data were used for this study. Since the research was conducted in my workplace using deidentified data, I requested data access via the executive responsible for credentialing research. A Data Use Agreement was provided to the accreditor and I received permission to access archival data from the proprietary database for the sole purpose of student research. The study population was hospitals applying for a hospital specialty accreditation. No human subjects were part of the study. Applicant data were de-identified and anonymous. Any hardcopy data were stored in a locked cabinet in a locked office in my home. Computer files were encrypted and stored on a personal computer only accessible by me. The data will be destroyed five years after the study was concluded. Walden University IRB approved this study under number 01-06-23-0649562.

Summary

The purpose of this quantitative study was to examine the effects of hospital size, ownership status, geographic location, hospital leadership, empowerment, practice, and new knowledge/innovation as predictors of hospital accreditation. This chapter described the quantitative research design and rationale as the first study of its kind to consider if hospital structures and processes are predictors of hospital specialty accreditation. This study was significant because it is the first of its kind to consider hospitals that fail accreditation, not just those who were successful. Purposive sampling was used inclusive of the entire population of accreditation applications from the study period. Archival data were used to reduce risk and bias. Rater reliability was well established and strong within the independent process variables. Validity was established in the independent variables through consensual qualitative methods. Finally, ethical procedures were followed to protect data in this non-human subject sample. Researcher bias was possible due to the study data sourced from my workplace. The use of archival data, de-identified, and anonymous, reduced positional and power relationships. In Chapter 4, the data collection, results, and summary of findings were presented.

Chapter 4: Results

The purpose of this cross-sectional study was to examine if hospital structures and processes were predictors of accreditation failure. Two RQs were created to explore (a) if hospital size, ownership status, or geographic location was associated with final hospital accreditation status or (b) if a process factor(s) was significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

Chapter 4 is organized into three major sections: data collection, results, and summary. I describe the use of archival data, sampling timeframe, and descriptive characteristics. Next, the assumptions of logistic regression are provided, both hypotheses are tested, and findings are presented. IBM SPSS version 28 was used for data analyses. A summary of the data analyses concludes this chapter.

Data Collection

Secondary data from 2015 to 2020 appraised hospital accreditation applications were obtained via an Excel spreadsheet, from the data partner. In total, 648 applications met the inclusion criteria for the study period. Seventy-two applications were removed from the dataset for applicants undergoing a second accreditation review (renewal) within the study period and for applicants with incomplete or missing score data. The final dataset contained 576 applicants for the study population. There were no changes in the data collection plan presented in Chapter 3.

The sample of applicants (N = 576) represents 9.6% of U.S. hospitals (5,981), excluding prison hospitals and school infirmaries, as there were no applicants from those

two AHA hospital types. All four U.S. Census Bureau regions were represented in the sample. Teaching and nonteaching hospitals and union and nonunion hospitals were included as well as not-for-profit and for-profit ownership types.

Results

Descriptive Statistics

Table 4 presents descriptive statistics for the study sample as well as the national population of all U.S. hospitals. According to the AHA (2022), there were 5,981 hospitals in the United States, excluding other types (e.g. prison hospitals, school infirmaries, n = 112, which were not dataset applicants). Of the study sample (N = 576), 550 or 96% were accredited or reaccredited for the hospital specialty accreditation during the study period, 2015 to 2020, representing 9.1% of the national hospital population. Twenty-six in the study sample failed accreditation during the study period, 0.43% of the national hospital population and 4% of the study sample. These accreditation failures were located in the South (50%) and Midwest (46.1%) respectively. This was proportionate to the number of U.S. hospitals in those regions (South 41%; Midwest 26.7%) and hospital specialty accredited hospitals (South 33.9%; Midwest 28.3%) in those regions. The Northeast and West regions had 23.3% and 14.6% of the data sample applicants, respectively, although the West has 20% of U.S. hospitals followed by the Northeast with 12.1%. There were no accreditation failures in the Northeast and one failure (3.9%) in the West.

Ownership patterns were proportionate for the data sample and all U.S. hospitals, with not-for-profit representing the majority of the sample's applicants (96%) and the

majority of U.S. hospitals (58%). Hospital type for the data sample applicants and all U.S. hospitals were also proportionate, with adult acute care representing 89.9% of accredited sample hospitals and 82.2% of all U.S. hospitals. Similarly, unionized healthcare workers in data sample applicants reported 15.9% unionized, which was comparable to U.S. hospitals' healthcare workers at 13.7%.

Two demographic characteristics were dissimilar between the data sample applicants and all U.S. hospitals: size of hospital and teaching status. Hospital size had a mean of 143 licensed beds for U.S. hospitals and 429 for the data sample applicants. The applicants reported 60.9% teaching status, and only 19% of U.S. hospitals were teaching. It is noteworthy that 25% of U.S. hospitals' teaching status were not found. Previous research on hospital size supported that the data sample's accredited hospitals had statistically significantly more beds than nonaccredited (Tai & Bame, 2017) although my study did not find significance. Table 5 provides the independent variable descriptive statistics.

Table 4

Descriptive Statistics, Demographics Study Sample and U.S. Hospitals

		Study sample		U.S. hospitals	
Characteristics		*N*	%	*N*	%
Hospitals accredited[a]		550	96%	5,148	100%
Not accredited		26	4%	-	
U.S. Census region[b]					
	Northeast	134	23.3%	621	12.1%
	South	195	33.9%	2,072	40.2%
	Midwest	163	28.3%	1,367	26.5%
	West	84	14.6%	1,088	21.3%
Ownership status					
	Not-for-profit	553	96.0%	2,960	57.4%
	For-profit	23	4.0%	1,228	23.8%
	Other (local/state/federal)	0	-	960	18.6%
Organization type[b]					
	Acute care, adult	520	89.9%	3,062	59.4%
	Pediatric acute	43	7.5%	265	5.1%
	Other (Veterans, Military)	13	2.3%	197	
	Psychiatric.	0	-	819	15.9%
	Rehab, long term	0	-	416	8%
	Long term, acute	0	-	389	7.5%
Teaching status					
	Teaching	351	60.9%	1,144	22.2%
	Nonteaching	225	39.1%	3,339	64.8%
	Not reported	0	-	665	13%
Union status[c]					
	Union	92	15.9%	1,247,000	13.7%
	No union	484	84.1%	9,102,189	86.3%

a. Study sample hospitals represent hospital specialty applicants who achieved or failed accreditation during the study period; U.S. Hospitals represent all AHA hospitals who achieved federal, state or private accreditation.

b. Includes community U.S. hospitals (*N* = 5,148); Excludes AHA-defined Other types; https://www.aha.org/statistics/fast-facts-us-hospitals

c. U.S. Bureau of Labor Statistics for number of employed health practitioners in unions; proportionate comparison to hospital employees within dataset applicants.

Table 5

Descriptive Statistics: Independent Variables

Independent Variables	Minimum	Maximum	Mean	Std. Deviation
Ownership status*	0	1	.040	.196
Transformational leadership	xx	xx	xx	.218
Structural empowerment	xx	xx	xx	.194
Exemplary practice	xx	xx	xx	.233
New knowledge	xx	xx	xx	.221
Hospital size as measured by beds	30	2059	429	277

Note. N = 576; IV Process measures redacted.

Structural Factors Analyses - RQ1

RQ1: Was hospital size, ownership status, or geographic location associated with final hospital accreditation status?

$H1_0$: There was no statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

$H1_a$: There was a statistically significant association between hospital size, ownership status, or geographic location and final hospital accreditation.

Binary logistic regression was performed for the RQ1 hypothesis. Seven assumptions of binary regression were considered to evaluate predictive accuracy, to test model fit, and to determine how much variation in the variable was explained by the RQs. The first assumption was a dependent dichotomous variable, which was met with a pass or fail outcome of interest, hospital accreditation. The second assumption was that the independent variables must be either continuous or nominal. This was met as the structural variables were ownership (nominal), hospital size (continuous), and geographic location (nominal). The third assumption of independence of observations

was met because each accreditation applicant was counted as a single participant and unrelated to the measurements of the other applicants in the study. The fourth assumption of mutually exclusive and exhaustive dependent and nominal independent variables was met as only two outcomes were possible in the dataset with the dependent accreditation outcome (pass/fail); nominal independent variables included the only available outcomes in the dataset for ownership (not-for-profit/for-profit) and geographic location (Northeast, South, West, and Midwest).

The absence of multicollinearity between independent variables was the fifth assumption, and this was met by evaluating the variance inflation factor (VIF) for values >10, which indicate a violation. The VIF range across all independent variables was 1.051 to 2.918; therefore, the absence of multicollinearity was met. The sixth assumption, the presence of a linear relationship between the continuous independent variable (hospital size) and the logit transformation of the dependent variable (hospital accreditation) was tested using the Box-Tidwell approach. Linearity was violated (p = .042), with the continuous independent variable and its interaction term for hospital size. To account for this violation, the values for hospital size were transformed by squaring, and the Box-Tidwell was rerun (Table A1). Application of a power transformation by squaring attempted to create a linear relationship between hospital size and the logit transformation of hospital accreditation. A linear relationship was needed to correctly interpret a one-unit change in the continuous variable on the value of the logit of the dependent variable by a constant amount. The subsequent Box-Tidwell test indicated the

transformed hospital size independent variable passed the assumption of linearity (p = .076).

The final assumption was no outliers or unusual data points. Outliers were defined as observations greater than three standard deviations and with $p < .001$. Regressions were run including all outlier observations both for the base model as well as a model including dummy coded variable that identifies outliers. The results of these analyses were not statistically different from one another thus the choice was made to present the base model analyses for the purpose of parsimony. Because all seven assumptions were met, the binary logistic regression model was run.

Statistical Findings for Structural Factors

The Omnibus test of model coefficients (see Table A2) revealed the model was statistically significant (p = .014). The Nagelkerke *R* Square values indicated the model as a whole accounted for 7.0% of the variance found within the data (see Table A3). The Hosmer-Lemeshow Test (see Table A4) indicated that the model as a whole did not achieve statistical significance (p = .633), confirming the model was correctly specified. The overall percentage accuracy in classification remained at 94.4% with and without the independent variables added to the model. Sensitivity for failed accreditation was 0%. Specificity for passed accreditation was 100%. The log regression results (see Table 6) indicated that none of the independent variables included in the full model achieved conventional levels ($p \leq .05$) of statistical significance.

Table 6

Logistic Regression Predicting Likelihood of Hospital Accreditation Failure Based on Geographic Location, Ownership Status, and Hospital Size

						95% C.I. for *OR*	
		B	S.E.	Sig.	Odds Ratio	Lower	Upper
Step 1[a]	Northeast			.100			
	South	1.200	.648	.064	3.321	.932	11.833
	Midwest	1.252	.658	.057	3.496	.962	12.705
	West	-.044	.927	.962	.957	.155	5.892
	Ownership status, for profit	1.148	.604	.057	3.152	.966	10.291
	Hospital size^2	.000	.000	.177	1.000	1.000	1.000
	Constant	-3.573	.604	<.001	.028		

Note. *N* = 576. Variables entered on Step 1: geographic location, ownership status, hospital size ^2.

Imbalance in Dataset

The distribution of the dataset was heavily imbalanced or skewed, with 96% of the outcome variable as passing hospital accreditation, and 4% failing. In logistic regression, which uses a machine learning classification algorithm, the aim was to maximize accuracy. Because the passing cases made up 96% of the dataset, to achieve accuracy, the model tended to classify passing cases correctly and ignore the failing (variable of interest) cases. To account for this real-world distribution imbalance, Firth regression techniques were applied in SPSS. Firth regression uses the penalized maximum likelihood function to reduce small sample/rare events bias present and to evaluate model fit. SPSS convergence failures with Firth regression continued despite numerous correction techniques. Thus, Firth was abandoned, and choice-based sampling was used instead for process factor analysis. Choice-based sampling is a design where

sampling is stratified based on the response or outcome variable (Scott & Wild, 1986) and was used as another technique to account for the imbalanced dataset.

A random number generator was applied to the observations (N = 576). I then pulled a random passing sample (n = 26) equal to all failing accreditation observations (n = 26) and evaluated model fit as compared to the full sample (N = 576). Model fit with a small, balanced dataset (n = 52) remained statistically insignificant, indicating it was correctly specified (p = .075). It is noteworthy, however, that in this small and balanced dataset, the p value is closer to .05 significance as compared to the full model (p = .633), meaning the choice-based model was closer to a poor fit. The log regression results (see Table 7) indicated that two of the geographic independent variables included in the choice-based model achieved conventional levels ($p \leq .05$) of statistical significance, South (p = .020) and Midwest (p = 0.015) as compared to no significance found in the imbalanced sample.

Table 7

Choice-Based Sampling for Structural Factors Analysis Due to Sample Imbalance

						95% C.I. for *OR*	
		B	S.E.	Sig.	*OR*	Lower	Upper
Step 1[a]	Geographic location			.026			
	Geographic location, South*	1.918	.821	.020	6.806	1.361	34.024
	Geographic location, Midwest*	2.054	.848	.015	7.802	1.479	41.150
	Geographic location, West	.167	1.051	.874	1.181	.151	9.266
	Ownership status, for profit	.569	1.205	.637	1.767	.167	18.750
	Hospital size^2	.000	.000	.208	1.000	1.000	1.000
	Constant	-.992	.690	.151	.371		

a. Variables entered on Step 1: geographic location, ownerships status, hospital size ^2.

b. *significant at the $p < .05$

Caution needed to be exercised with interpreting this under-sampling technique, as the rule of thumb events per variable sample size was reduced from an ideal minimum of 50 events per independent variable to 7.4 events per independent variable. This lower than the minimum rule of thumb of 10 reduced statistical power increasing the probability of a Type II error. Due to this factor, and lack of improvement in model fit with a balanced sample, the full model was used for final analysis.

Summary for Structural Factors Analyses

The null hypothesis was accepted and alternate hypothesis rejected. The model was statistically significant ($p = .014$), a good fit ($p = .633$) but not a good predictor (Nagelkerke R square 7% of dependent variable variance explained). Geographic location, ownership status, and hospital size were not statistically significantly predictive factors at the $p \leq .05$ level, to the likelihood that a hospital will fail accreditation.

Process Factor Analyses - RQ2

RQ2: Was a process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location?

$H2_0$: There was no process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

$H2_a$: There was process factor(s) significantly predictive of final hospital accreditation, after controlling for hospital size, ownership status, and geographic location.

Binary logistic regression was performed to test process factors hypotheses. Seven assumptions of binary regression were considered to evaluate predictive accuracy, test model fit, and determine how much variation in the variable was explained by the RQs. The first assumption was a dependent dichotomous variable which was met with a pass or fail outcome of interest, hospital accreditation. The second assumption was independent variables which were either continuous or nominal. This was met as all process and structure variables met this condition: Ownership (nominal), hospital size (continuous), geographic location (nominal), transformational leadership score (continuous), structural empowerment score (continuous), exemplary practice score (continuous), and new knowledge score (continuous). The third assumption of independence of observations was met since each accreditation applicant was counted as a single participant and unrelated to the measurements of the other applicants in the

study. The fourth assumption of mutually exclusive and exhaustive dependent and nominal independent variables was met as only two outcomes were possible in the dataset with the dependent accreditation outcome (pass/fail); nominal independent variables included the only available outcomes in the dataset for ownership (not-for-profit/for-profit) and geographic location (Northeast, South, West, and Midwest).

The absence of multicollinearity between independent variables was the fifth assumption and this was met by evaluating the VIF for values >10 which indicate a violation. The VIF range across all independent variables was 1.051 to 2.918, therefore the absence of multicollinearity was met. The sixth assumption, the presence of a linear relationship between the continuous independent variables (transformational leadership, structural empowerment, exemplary practice, new knowledge, and hospital size) and the logit transformation of the dependent variable (hospital accreditation), was tested using the Box-Tidwell approach. Linearity was met with all continuous independent variables' interaction terms statistically non-significant.

The final assumption was no outliers or unusual data points. Outliers were defined as observations greater than three standard deviations and with $p < .001$. Twenty-six outliers were identified therefore this assumption was violated. Regressions were run including all outlier observations both for the base model as well as a model including dummy coded variable that identifies outliers. The results of these analyses were not statistically different from one another thus the choice was made to present the base model analyses for the purpose of parsimony. Because all seven assumptions were met, the binary logistic regression model was run.

Statistical Findings for Process Factors Analyses

The Omnibus test of model coefficients, (see Table B1), revealed the model was statistically significant ($p < .001$). The Nagelkerke R Square values indicate that the model as a whole accounts for 46.5% of the variance found within the data (see Table B2). The Hosmer-Lemeshow Test (see Table B3) indicates the model as a whole does not achieve statistical significance ($p = .184$) confirming the model was correctly specified. The overall percentage accuracy in classification improved from 94% to 95.7% when including all independent variables to the model. Sensitivity for failed accreditation was 34.4%. Specificity for passed accreditation was 99.3%. The logistic regression results (see Table 8) indicate that transformational leadership ($p = .004$), and exemplary practice score ($p = .043$) achieved statistical significance. For each unit increase in the transformational leadership score, the odds of accreditation failure decreased by OR .013 (1-.013). For each unit increase in the exemplary practice score, the odds of accreditation failure decreased by OR .079 (1-.079). Neither structural empowerment ($p = .085$) nor new knowledge ($p = .514$) added significantly to the failure prediction. Of note was the structural factor, ownership, which in this fully specified model, reached statistical significance ($p < .001$). The odds of accreditation failure were 16.2 times greater in for-profits than not-for-profit ownership types.

Table 8

Logistic Regression Predicting Likelihood of Hospital Accreditation Failure Based on Process Variables While Controlling for Structural Variables Geographic Location, Ownership Status, and Hospital Size

						95% C.I.for *OR*	
		B	S.E.	Sig.	*OR*	Lower	Upper
Step 1[a]	Northeast			.338			
	South	.452	.724	.532	1.572	.380	6.501
	Midwest	.871	.735	.236	2.390	.566	10.091
	West	-.596	1.046	.569	.551	.071	4.277
	Ownership status, for profit*	2.787	.758	<.001	16.238	3.672	71.800
	Hospital size	-.001	.001	.358	.999	.997	1.001
	Transformational leadership*	-4.306	1.512	.004	.013	.001	.261
	Structural empowerment	-2.707	1.573	.085	.067	.003	1.457
	Exemplary practice*	-2.544	1.268	.045	.079	.007	.942
	New knowledge	.948	1.453	.514	2.580	.149	44.554
	constant	19.462	3.174	<.001	283303669.047		

a. Variable(s) entered on step 1: geographic location, ownership status, hospital size, transformational leadership, structural empowerment, exemplary practice, new knowledge.

b. *significant at the $p < .05$

Imbalance in Dataset

The distribution of the dataset was heavily imbalanced or skewed with 96% of the outcome variable as passing Hospital Accreditation, and 4% failing. In logistic regression, which used a machine learning classification algorithm, the aim was to

maximize accuracy. Since the passing cases made up 96% of the dataset, to achieve accuracy the model tended to classify passing cases correctly and ignore the failing (variable of interest) cases. To account for this real-world distribution imbalance, Firth regression techniques were applied in SPSS. Firth regression used penalized maximum likelihood function to reduce small sample/rare events bias present in the dataset and to evaluate model fit. SPSS convergence failures with Firth regression continued despite numerous correction techniques. Thus Firth was abandoned and choice-based sampling used for process factor analysis.

Choice-based sampling is a design where sampling is stratified based on the response or outcome variable (Scott & Wild, 1986). A random number generator was applied to the observations (N=576). I then pulled a random passing sample (n=26) equal to all failing accreditation observations (n = 26) and evaluated the fully specified model fit as compared to the full sample (N = 576). Model fit remained statistically insignificant (p = .826) with a small, balanced dataset (n = 52), meaning the choice-based model was correctly specified. Using this under-sampling technique, however, the rule of thumb events per variable sample size was reduced from an ideal minimum of 50 events per independent variable to 7.4 events per variable, which reduced statistical power and increased the probability of a Type II error. Statistical significance (see Table 9) was lost in the process factor transformational leadership (p = .056) and structural factor ownership status (p = .079) as compared to the fully specified, imbalanced model. Significance was maintained in exemplary practice (p = .031) similar to the imbalanced (base) model. Due to the loss of statistical power and unimproved model fit, caution

should be exercised in interpreting the choice-based results. Therefore, the original, base model was used for interpretation.

Table 9

Choice-Based Sampling for Process Factors Analysis Due to Sample Imbalance

						95% C.I. for *OR*	
		B	S.E.	Sig.	*OR*	Lower	Upper
Step 1[a]	Geographic location			.593			
	Geographic location, South	-.331	1.225	.787	.718	.065	7.918
	Geographic location Midwest	1.133	1.236	.359	3.104	.275	34.975
	Geographic location, West	-.404	1.421	.776	.668	.041	10.821
	Ownership status, for profit	3.577	2.038	.079	35.764	.659	1939.977
	Hospital size	-.001	.002	.592	.999	.995	1.003
	Transformational leadership	-7.036	3.687	.056	.001	.000	1.211
	Structural empowerment	.641	3.580	.858	1.899	.002	2116.314
	Exemplary practice	-7.147	3.307	.031*	.001	.000	.514
	New knowledge	1.879	3.600	.602	6.548	.006	7585.445
	Constant	31.066	9.237	<.001	31019045846878.125		

a. Variable(s) entered on step 1: Geographic location, ownership status, hospital size, transformational leadership score, structural empowerment score, exemplary practice score, new knowledge score.

b. *Significant at the $p<.05$ level

Summary for Process Factors Analyses

The null hypothesis was rejected and alternate hypothesis accepted. The model was statistically significant (p <.001), and a good fit (p =.197). The model explained 46% of the variance in the dependent variable, accreditation (Nagelkerke R squared). Process factors transformational leadership (p =.004) and exemplary practice (p =.045) were statistically significant predictors for hospital accreditation failure, holding the structural variables constant. Structural empowerment (p =.085) and new knowledge (p =.514) did not have a significant effect at the $p \leq .05$ value. The structural factor, ownership, in this fully specified model, reached statistical significance (p < .001). The odds of accreditation failure were 16.2 times greater in for-profits than not-for-profits.

Summary

Binary logistic regression was used to test hypotheses in the two RQs. Data were transformed for one continuous variable, hospital size, in the structural factors analysis and afterward all seven assumptions were met. Choice-based sampling (n = 52) was employed to validate log regression findings for each RQ due to the imbalanced study dataset of pass to fail accreditations. No improvement in model fit was realized for either RQ as compared to the standard binary regression technique of the full population (N = 576). Due to the small sample, statistical power was greatly reduced and probability of a Type II error was increased. Therefore, the full population regression model for both RQs was used for interpretation.

For the structural factors analyses, the null hypothesis of no statistically significant association existing between hospital size, ownership status, or geographic

location and hospital accreditation was accepted, with 95% confidence. The model was statistically significant (p = .014), a good fit (p = .633) but not a good predictor (Nagelkerke R squared, 7% of variance explained). Geographic location, ownership status, and hospital size were not statistically significantly related, at the $p \leq .05$ level, to the likelihood that a hospital failed accreditation.

For the process factors analyses, the null hypothesis was rejected and alternate hypothesis accepted. There was a statistically significant difference with two of the four process measures, transformational leadership (p = .004) and exemplary practice (p = .045). For each unit increase in the transformational leadership score, the odds of accreditation failure decreased by .013 times (OR = .013). For each unit increase in the exemplary practice score, the odds of accreditation failure decreased .079 times (OR = .079). The model was statistically significant (p <.001), and a good fit (p =.197). Structural empowerment (p = .085) and new knowledge (p = .514) did not have a significant effect. The structural factor, ownership, in this fully specified model, reached statistical significance (p < .001). The odds of accreditation failure were 16.2 times greater in for-profits than not-for-profits.

In Chapter 5, I compared my findings to those in the literature described in Chapter 2. The adapted Donabedian framework was used to contextualize and interpret the findings. Next, study limitations and recommendations for future study were discussed and I concluded with overall key messages about this study.

Chapter 5: Discussion, Conclusions, Recommendations

This chapter provides the purpose and nature of the study, the interpretation of findings, limitations, recommendations for further research, implications for positive social change and practice, and conclusions from the key study elements.

Overview: Purpose, Nature, and Why Conducted

Evidence was found in the literature of the widespread desirability and acceptance of hospital accreditation as a management tool. There was also inconsistency in factors associated with accreditation achievement. Consequently, the purpose of this quantitative study was to examine the effects of structural factors hospital size, ownership status, geographic location, and process factors hospital leadership, empowerment, practice, and new knowledge/innovation on the likelihood of hospital accreditation failure.

The nature of this quantitative, observational study was a cross-sectional design, using multivariable logistic regression analyses of archival data collected from U.S. hospitals that applied for a hospital specialty accreditation program. Data on the three hospital structures and four hospital processes were obtained from each hospital's application for the hospital accreditation program. The Donabedian model provided the theoretical framework.

This study was conducted to inform healthcare leaders of structural and process factors that may be related to the likelihood of failing hospital accreditation. A better understanding of structures and processes within hospitals seeking accreditation may inform policy- and decision-makers if associations exist between them. Specifically,

understanding hospital factors predictive of accreditation failure may help hospitals, governments, and payors directly address strategies that could influence a successful accreditation outcome and improve care processes.

Key Findings

For the structural factors analyses, no statistically significant association existed between hospital size, ownership status, or geographic location, and failing hospital accreditation. For the process factors analyses, there was a statistically significant association with two of the four process factors: adoption of transformational leadership and adoption of exemplary practices, while controlling for the three structural factors. Process factors structural empowerment and new knowledge did not have a significant effect on accreditation failure. The structural factor, ownership, in the fully specified model, reached statistical significance.

The following sections outline the findings in greater detail.

Interpretation of Findings

The findings of this observational study of factors influencing hospital accreditation support previous research that certain organizational characteristics are associated with accreditation. These findings suggest that geographic location, number of licensed beds in hospitals, adoption of structural empowerment elements, and adoption of new knowledge and innovation have no statistically significant association to a hospital failing accreditation. The findings support previous research that adoption of transformational leadership styles and exemplary practice actions are a significant yet indirect protective effect for a hospital failing accreditation. Whether the hospital is for-

profit or not-for-profit only achieves statistical significance in the fully specified model. Accordingly, all hospitals could achieve accreditation. Further, transformational leadership and elements that support professional practice should be prioritized on the accreditation journey, given their positive influence and impact on accreditation outcomes.

The present study of accreditation data from my partner organization is the first known study of both successful and failed applicants' characteristics. Prior researchers (Tai & Bame, 2017; Wardhani et al., 2019) examined various hospital accreditations and found in successful applicants' statistically significant positive predictors for not-for-profit ownership status and larger hospital size but not hospital location (Tai & Bame, 2017). In my study of hospital specialty accreditation applicants, neither hospital size, location, nor not-for-profit status reached predictive significance. However, the adoption of a transformational leadership style, exemplary practice actions, and for-profit status are significant findings.

The Donabedian model provided a theoretical framework to guide the research study and interpret the findings, building on prior hospital accreditation characteristics research using the Donabedian framework (see Tai & Bame, 2017). The RQs and data analyses follow the Donabedian model by including Donabedian's structural and process factors that may be predictive of an accreditation outcome. The study results made sense when viewed through the lens of the Donabedian model and no changes to the model framework were required.

Structural Factors Interpretation

Structural findings were unsurprising based on my personal experience working in and with hospital specialty accredited organizations. Previous literature for hospital size found the data sample's hospitals 1.75 times larger ($p < .001$; Tai & Bame, 2017). My findings support larger hospital size on average; however, no statistically significant differences were found in applicant bed sizes and accreditation failure. For hospital administrators with smaller and larger size hospitals, these findings support other factors beyond hospital size that may be associated with accreditation outcomes.

Secondly, ownership status was statistically significantly associated with accreditation failure, in my fully specified model. Ownership was highly skewed in my study toward not-for-profit (96%). For-profit applicants represent only 4% of the 576 applicants yet 7.6% of the 26 failures. In research on general hospital accreditation, not limited to this study's sample data, Wardhani et al. (2019) found that military hospitals were five times more likely than public hospitals to be accredited ($OR = 5.09$, $p = .014$), and private hospitals were almost twice as likely to be accredited; however, the findings were not significant ($OR = 1.71$, $p = .242$). One theory is that for-profit owners want to reduce costs and gain efficiencies so investment in additional resources to enhance quality improvement associated with accreditation and seek additional accreditations contradicts their profit motives. This may partially explain why so few for-profit organizations seek additional accreditations beyond the regulatorily required despite some evidence that accreditation improves knowledge and quality and, therefore, reduces costs.

Thirdly, geography was not statistically significantly associated with accreditation failure in my study. This is similar to the findings of Tai and Bame (2017), who showed that Magnet-accredited hospitals were 8.3% more likely in less densely populated areas; however, their results did not reach statistical significance. While the measure of geographic location for my study was broadly defined by U.S. Census regions, the most densely populated census regions by number of hospitals, South and Midwest, also had the most accredited hospitals from my sample's dataset. In total, structural factors support that when all accreditation applicants are included in the regression models, hospital size, ownership status, and geographic location were not determining factors.

Process Factors Interpretation – Transformational Leadership

Higher transformational leadership adoption was statistically significantly associated with lower likelihood hospital accreditation failure. Higher transformational leadership scores reduce the odds of accreditation failure .013 times. This is not surprising, in my experience, as a lack of transformational leadership has often been cited as primary reason for accreditation failure by organizations and accreditation appraisers. Transformational leadership behaviors underpin a major tenet in the hospital specialty accreditation program's standards and the appraisal process. This leadership style supports the program's principle that transformational leadership characteristics positively change how followers think and interact within groups. Followers experience this effect through leaders' inspiration, stimulation, role modeling, and support (Anselmann & Mulder, 2020). A study by Mosadeghrad and Ghazanfari (2021) built on

the importance of leadership in accreditation and found it to be the most important enabler in hospital accreditation, aligning with my findings.

Overall, my study's findings largely aligned with earlier research that demonstrated positive relationships between transformational leadership behaviors and levels of organizational change, such as accreditation, work environment factors, and effects on followers. Farahnak et al. (2019) found that transformational leadership was positive and significant ($\beta = .235$, $p = .012$) in quality and cultural change such as those associated with hospital accreditation. Similarly, U.S. nurse leaders from clinical environments reported significant and moderately positive perceptions of transformational leadership and work environment factors (Spearman $\rho = .51$, $p < .01$; Shaughnessy et al., 2018). Furthermore, Buil et al.'s (2019) research supports positive and direct effects of a transformational leadership style on front line worker job performance ($\beta = .253$, $t = 3.692$).

Magnet Program founders recognized that Magnet accreditation status might be transitory (Hamadi et al., 2021) and hypothesized that strong leadership commitment was associated with Magnet sustainment. Two factors that most likely contributed to the sustainment or collapse of Magnet characteristics were a change in the chief nursing officer or chief executive officer (Clavelle et al., 2012). These changes spoke to the continued importance of executive leaders supporting and sustaining an accreditation-worthy culture and are further supported by my study's findings.

Transformational leadership literature also extends to project management factors, such as those needed for accreditation processes. My findings support this body

of research supporting the positive effects of a transformational leadership style on project success. In a study examining project management and team building, Aga et al. (2016) suggested that transformational leadership behaviors were significantly associated with project management and team building, factors associated with achieving accreditation. Their research resulted in positive and significant relationships between transformational leadership and project success ($\beta = 0.521$, $p < 0.001$). In total, these studies suggest that transformational leadership can be more effective when leaders are engaged, which supports the current study's findings that increased transformational leadership adoption results in significantly lower odds of accreditation failure.

Process Factors Interpretation - Exemplary Practice

Adoption of exemplary practices aligned with current research on the mostly positive effects of registered nursing practice. Findings support extant literature suggesting that registered nursing practice has the most direct, positive impact on hospitalized patient quality metrics. My study aligned with current literature that the higher the exemplary practice adoption, the less likely applicants are to fail accreditation. In quality metrics such as blood stream infections and surgical site infections, Magnet accredited hospitals were significantly less likely to have bloodstream-associated central line infections than matched, non-Magnet hospitals. Similarly, Magnets had 40% lower odds of surgical site infections in hospitalized patients (Bergquist-Beringer et al., 2018).

These findings support that improved work environments for nurses, validated through accreditation programs such as Magnet Recognition, are critical for positive patient outcomes (Aiken et al., 2018; Silber et al., 2016).

Limitations of the Study

There were several limitations to this study. The nature of this study and predictive design limited interpretation to association, not causation (see Creswell, 2014). There may be missing factors that influence hospital accreditation outcomes and confounders not accounted for in the regression models. Cross-sectional, archival data were used, which limited examining accreditation outcomes over time to evaluate changes. While no data were evaluated from the COVID-19 pandemic period, they may have influenced comparability of prepandemic results in this study to future, postpandemic studies. Selection bias from purposive sampling limits generalizability to my data sample hospitals within the U.S. hospitals dataset. Reliable comparisons cannot be made for accreditation of all U.S. hospitals as compared to the hospital specialty accreditation applicants in my study due to incomplete U.S. hospital data on accreditation types and requirements. Lastly, there was potential for researcher bias because I used archival data from a company where I was employed. However, this was controlled using de-identified, aggregate data through confidential third parties, and no researcher bias was identified during the course of the study.

Recommendations

Three recommendations are included for future study: Include other hospital accreditation types, increase transparency with accreditation application outcomes, and

explore additional predictor variables such as organizational quality culture and RN workload. Expanding the study sample to include other hospital accreditations such as TJC or DNV will strengthen external validity of findings associated with likelihood of accreditation failure.

A second recommendation is for accreditors and their hospital clients to consider publishing accreditation application outcomes. Data on hospital accreditation applicants is difficult to find. Outcome-focused research inclusive of both successful and failed applicants will build on extant research on accreditation as a management tool. Additionally, findings may challenge accreditors to modify accreditation standards based on empirical outcome evidence.

A third recommendation is to explore and expand on the positive predictors transformational leadership and exemplary practice on accreditation success as found in my study. Updating sample accreditation data and expanding organizational structure and process factors found in existing studies such as organizational quality culture, patient population served, and RN workload will increase reliability (Correa et al., 2018; Tai & Bame, 2017). In total, these recommendations build on an evidence base that accreditation is achievable, plausible, and effective.

Implications

Accreditation is achievable in any hospital and is more likely when transformational leadership and exemplary practice are fully adopted. In addition, hospital location, ownership status, and hospital size are not significant predictors of accreditation failure. Furthermore, the potential impact of positive social change is seen

through improved hospital safety associated with accreditation. Improved hospital safety measures are associated with cost savings for patients and payors (Araujo et al., 2020; Hussein et al., 2021; Lam et al., 2018, Petrovic et al., 2018). Cost savings means that more money and resources may be allocated to other societal and community needs. Nurses and other healthcare providers may benefit from practicing in hospitals that, through accreditation, provide more autonomy, resources for nursing professional development, education, and higher expectations and practice standards, which may lead to innovations in care delivery.

Hospital administrators can effect positive social change by investing in transformational leadership development and role modeling transformational leadership behaviors such as trust, aspirational visioning, and personalized consideration. Secondly, hospital administrators should elevate professional practice by adopting, supporting, and maintaining exemplary practice actions: autonomous clinical and administrative practice, open and collaborative partnerships, measuring and monitoring key outcome measures (not just compliance measures), and evaluating against external benchmarks. The culture of continuous quality improvement embedded within the adoption of exemplary practice suggests measurable improvements for providers, patients, and the organization and local communities. Finally, through these collective efforts, hospitals should use the process of accreditation as quality management tool alongside the science of health care to reduce patient harm, proactively assess and address risk, and reinvest the cost savings and efficiencies into other social needs within the community, often competing for the same limited resources.

Conclusion

Transformational leadership and exemplary practice were found to be significant positive predictors of a lower likelihood of specialty accreditation failure in hospitals. As both transformational leadership behaviors and exemplary practice actions rise, the odds of accreditation failure fall. For-profit hospital status was also found to be a significant predictor of a higher likelihood of specialty accreditation hospital failure. In recognizing accreditation as a quality management tool, understanding factors identified in this study may support investment in efficient and effective strategies to achieve it. In fact, these could be addressed by hospital administrators in advance of seeking accreditation application. Health care challenges continue to grow, and the impact of the recent global COVID-19 pandemic has yet to be fully realized. Accreditation is one tool widely accepted and adopted. Thus, it is imperative for hospitals leaders, providers, payors, governments, and society to apply and utilize tools like accreditation with the goal of healthier, safer communities.

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Appendix A: Technical Statistical Tests for RQ1

Table A1

Variables in the Equation - Hospital Size Squared for Linearity Testing (Box-Tidwell)

				95% C.I.for EXP(B)	
		Sig.	Exp(B)	Lower	Upper
Step 1[a]	Northeast	.076			
	South	.054	3.492	.977	12.480
	Midwest	.058	3.486	.958	12.692
	West	.885	.874	.141	5.404
	Ownership Status, For Profit	.027	3.951	1.172	13.317
	Hospital Size^2	.078	1.000	1.000	1.000
	LN_sqHS by Hospital Size^2	.076	1.000	1.000	1.000
	Constant	<.001	.012		

a. Variable(s) entered on step 1: Geographic Location, Ownership Status, sqHS, LN_sqHS * sqHS.

Table A2

Omnibus Test of Model Coefficients

Step 1	Chi-square	df	Sig.
Step	14.342	5	.014
Block	14.342	5	.014
Model	14.342	5	.014

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Table A3

Model Summary for Variation Explained

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	232.830[a]	.025	.070

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table A4

Hosmer and Lemeshow Test Goodness of Fit

Step	Chi-square	df	Sig.
1	6.131	8	.633

Appendix B: Technical Statistical Tests for RQ2

Table B1

Omnibus Test of Model Coefficients

Step 1	Chi-square	df	Sig.
Step	102.898	9	<.001
Block	102.898	9	<.001
Model	102.898	9	<.001

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Table B2

Model Summary for Variation Explained

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	145.210[a]	.162	.465

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Table B3

Hosmer and Lemeshow Test

Step	Chi-square	Sig.
1	11.328	.184