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Catheter-Associated Urinary Tract Infections (CAUTIs) and the Relationship Between Hospital Overall Star Ratings and Reimbursement Rates

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by

Cynthia Palmer

MSN, Governors State University, 2009

BSN, Graceland University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

Catheter-associated urinary tract infections (CAUTIs) are one of the most prevalent hospital-acquired infections. Although preventable, CAUTIs affect approximately 3.6 million people worldwide. The impact of CAUTIs has put enormous financial burdens on the healthcare system. CAUTIs have led to an increase in the length of stay and an increase in mortality and morbidity rates. The purpose of this quantitative correlational study is to explore the impact of hospital overall star ratings and the reimbursement rates (independent variables) imposed by the Centers for Medicare and Medicaid Services (CMS) on acute care hospitals in the United States when patients develop CAUTIs (dependent variable). Donabedian's theoretical framework of structure, process, and outcomes is the theoretical foundation for this study. The study's population is hospitalized patients in acute care hospitals in the United States who have a diagnosis of CAUTI. Secondary data were obtained from the CMS Care Compare website. Pearson's correlation was used to analyze the research questions. Based on the analysis findings, there is a weak, linear, and significant correlation between CAUTIs and reimbursement rates. Findings also indicate that hospital's overall star ratings are not correlated to CAUTIs. This research contributes to positive social change by demonstrating evidence-based mediations that point toward the impact of CAUTIs on reimbursement rates. Hospital administrators can use the findings and implement processes and policies that can help to reduce the prevalence of CAUTIs, which can decrease the loss of payments from insurance payers and minimize length of stay for patients.

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Section 1: Foundation of the Study and Literature Review

Introduction

Catheter-associated urinary tract infections (CAUTIs) are one of the most prevalent hospital-acquired infections (HAIs). HAIs are illnesses that are not present at the time of admission but develop within 48 hours or 30 days after hospitalization from a healthcare facility (Ahmed et al., 2021). According to Werneburg (2022), approximately one million cases of CAUTIs are diagnosed in the United States every year. Other researchers have reported that millions of patients in acute care hospitals get sick with HAIs each year (Agency for Healthcare Research and Quality [AHQR], 2020; Reisinger et al., 2017; Schrank & Branch-Elliman, 2017). In the United States, the prevalence of urinary complications such as CAUTI is approximately 6% when compared to other HAIs (Katayama et al., 2022). CAUTIs can affect people of different ages, socioeconomic backgrounds, and financial statuses. Every year CAUTIs add $390 million to $450 million to U.S. hospital costs (Vokes et al., 2018). Because of the risks to patients and the financial penalties associated with CAUTIs, healthcare administrators must remain vigilant in implementing preventative measures to reduce the frequency and curtail the cost associated with the infection.

The patients at the highest risk of getting CAUTIs are those who experienced prolonged use of indwelling catheters. Approximately 20% of hospitalized patients in Western countries (United States, Germany, Canada, and France) are exposed to the placement of a urinary catheter (Katayama et al., 2022). According to Chaung and Tambyah (2021), the risk of developing CAUTI increases when an indwelling urinary

catheter is in place for more than 2 consecutive days. About 75% of all urinary tract infections in hospitalized patients are associated with the use of indwelling urinary catheters (Vokes et al., 2018). In this quantitative correlational study, I explored the relationship between hospital overall star ratings and the difference in reimbursement rates from the prevalence of CAUTIs for patients in acute care hospitals in the United States.

Findings from this study can lead to positive social change, such as a decrease in financial burdens for healthcare organizations and consumers, decreased length of stay (LOS), and improved patient outcomes. The benefits of these social changes are multifaceted, both for the hospitals and the patients. Hospital administrators can use the findings to implement strategies for inhibiting preventable HAIs such as CAUTI to achieve better clinical outcomes and reduce financial penalties associated with the infection, such as the 1% reduction in payments imposed by the Centers for Medicare and Medicaid Services (CMS; CMS, 2022c). Added benefits are hospital administrators can use the findings to develop plans on staffing, implement strategies to improve the overall hospital overall star ratings and develop policies for the use of urinary catheters in hospitalized patients.

In Section 1, I discuss the background, problem statement, purpose of the study, research questions, hypothesis, theoretical framework, and nature of the study. I also discuss the literature search strategy, literature review related to key variables and or concepts, definitions, assumptions, the scope of delimitations, limitations, significance, summary, and conclusion.

Background

Hospitalized patients are at an increased risk of developing one or more HAIs (Landerfelt et al., 2020). In addition to the high incidence and the extra costs of treating patients with HAIs, the infections are a threat to patient safety (Afhami, 2019). Many patients can develop serious complications that can lead to poor outcomes, such as an increase in morbidity and mortality rates, and LOS (Cervantes & Hei, 2022). Poor outcomes and an increase in LOS can affect a hospital's overall star ratings negatively and affect the healthcare organization's reputation (Kurian et al., 2021). According to Schrank and Branch-Elliman (2017), approximately 3.6 million HAIs occur in hospitalized patients. Of all the HAIs, CAUTI is the most widespread and accounts for 70% to 80% of cases (Reisinger et al., 2017). The prevalence of CAUTIs can present an enormous financial burden for healthcare organizations and can lead to reductions in reimbursements from insurance payers.

In 2007, the CMS made it a requirement that healthcare organizations document a complete patient admission assessment and include any potential HAIs that were present at the time of admission (Anand et al., 2019). The reimbursement penalty by CMS went into effect in 2008. According to Ferguson (2018), the annual cost of treating CAUTIs in the United States is approximately $340 billion. In addition to the cost of treating CAUTIs, the reduction in payment by CMS can have significant financial implications for healthcare organizations. Healthcare administrators must remain watchful and implement strategies that will curtail the prevalence of CAUTIs and lessen the financial penalties and the loss of revenue.

Although many healthcare organizations have implemented strategies to reduce CAUTIs, researchers have reported that the number of patients affected by CAUTIs continues to increase (Letica-Kriegel et al., 2019). A report by Landerfelt et al. (2020) indicated that the Centers for Disease Control and Prevention (CDC) found that approximately 3% of hospitalized patients developed HAIs daily. Although there is a 3% increase in HAIs for hospitalized patients, the rate of increase differs for CAUTIs. CAUTIs have a higher percentage increase than some of the other HAIs (Coventry et al., 2021; Vokes et al., 2018). Researchers have found that between 2009 and 2013, there was a 6% increase in the rate of CAUTIs in the United States (Letica-Kriegel et al., 2019; Sopirala et al., 2018). According to Vokes et al. (2018), HAIs not only affect the quality of care and patient safety, but it is also a threat to the financial sustainability of healthcare organizations.

Problem Statement

The specific research problem that I addressed throughout this study was if there is a relationship between the prevalence of CAUTIs on hospital overall star ratings, and the difference in reimbursement rates for hospitalized patients with CAUTIs in acute care hospitals. In most healthcare organizations, the quality team monitors the prevalence of CAUTIs and reports to CMS. Coventry et al. (2021), Jain et al. (2015), Parker et al. (2017), and Vokes et al. (2018), posited that CAUTIs are preventable, but continue to persist and become the most common HAIs. Healthcare administrators must update policies and strategies to ensure they implement effective preventative measures to

reduce the number of CAUTIs, protect hospital overall star ratings, and eliminate the financial penalties imposed by insurance payers when patients develop CAUTIs.

The National Healthcare Safety Network (NHSN) HAI progress report for CAUTIs showed no change from 2009 to 2014 (Snyder et al., 2020). Billions of dollars are spent annually on treatment and other resources used in preventing HAIs (Ferguson, 2018). The estimated cost of treatment for one patient with CAUTI is approximately $7,670 (Ray-Barruel et al., 2020). The added costs and resources for treating patients with CAUTIs and the increase in the LOS can put more financial pressure on healthcare administrators' operational budgets. Negative quality reporting can affect hospitals' overall star ratings and reputation. In a report from Healthcare Financial Management (2016), the author noted that when healthcare organizations do not adequately manage HAIs, the organizations can have more financial penalties and negative publicity. Although many studies were conducted, Backman et al. (2021) found limitations in interventions and the existing challenges in preventing CAUTIs within healthcare organizations. Researchers have found that CAUTIs predispose patients to increased morbidity and mortality, LOS, and additional financial burdens (Backman et al., 2021; Bagchi et al., 2020; Dadi et al., 2021).

During the literature review, it was not clear if a relationship exists between the prevalence of CAUTIs on hospital overall star ratings and the difference between the reimbursement rates for hospitalized patients with CAUTIs in acute care hospitals. More information was needed on how the prevalence of CAUTIs affects outcomes and how leadership involvement and strategies can improve the hospital's overall star ratings and

financial status. I explored the relationship between hospital overall star ratings and the difference in reimbursement rates from the prevalence of CAUTIs for patients in acute care hospitals in the United States.

Available information on the gaps can help healthcare administrators mitigate many of the problems related to CAUTIs. A systematic review by Maurer et al. (2021) showed that there was a gap in the structural and process approaches to the prevention of HAIs. The structure of this study was reimbursement models. Through the process, I examined the clinical practice guidelines and insurance approval, and the outcome linked to reimbursement rates, hospital overall star ratings, and incidences of CAUTIs. Knobloch et al. (2019) found that there is a need to explore how healthcare leadership helps or hinders the implementation of strategies in the prevention of HAIs.

Purpose of the Study

The purpose of this quantitative correlational study was to explore the impact of hospital overall star ratings and the financial implications imposed by CMS on acute care hospitals when patients develop CAUTIs. I used a quantitative correlational method for this study. I quantified and analyzed the hospital's overall star ratings and reimbursement rates (independent variables) and CAUTIs in hospitalized patients in acute care hospitals (dependent variables). Quantitative researchers use statistical techniques to answer research questions of what, where, or when (Apuke, 2017). Through the questions in the study, I determined if there is a relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals and the difference in reimbursement rates for acute care hospitals.

Research Questions and Hypotheses

Research Question 1 (RQ1): What is the relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals?

Null Hypothesis ($H_0$1): There is no statistically significant relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals.

Alternative Hypothesis (H_a1): There is a statistically significant relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals.

Research Question 2 (RQ2): Is there a significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs?

Null Hypothesis ($H_0$2): There is no statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

Alternative Hypothesis (H_a2): There is a statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

I used IBM SPSS Statistics to measure the independent and dependent variables. The independent variable for RQ1 is the hospital's overall star ratings, whereas reimbursement rates are the independent variable for RQ2. Pearson's correlation was used to measure the independent and dependent variables, while descriptive statistics were used to provide a summary of the data in the study.

Theoretical Framework

Researchers have used Donabedian's (1966) theoretical framework extensively in quality improvement measures, and it has been proven to be a successful theoretical framework in healthcare organizations (Maurer et al., 2021). Healthcare administrators can use Donabedian's theoretical framework to guide the strategies that need to be implemented in achieving positive quality outcomes and decreasing financial penalties for their organizations (Donabedian, 1966). Leaders can use the application of this framework in CAUTI prevention to progress through structure, process, and outcomes (McCullough et al., 2023). In this study, the structure aligns with the reimbursement models, staffing, policies, and leadership support. The process or throughput involved the examination of the clinical practice guidelines, insurance approval, and LOS, and the outcome focused on how it impacts reimbursement rates, hospital overall star ratings, incidences of CAUTIs, and inpatient morbidity and mortality rates.

Because CAUTIs and other HAIs are preventable, CMS has included HAIs in the value-based incentive programs for quality outcomes, which may affect reimbursement. Hospital administrators must focus on applying preventative measures to reduce the incidence of HAIs among the patients in their organizations (Maurer et al., 2021). The logical connection between Donabedian's framework and the nature of the study may supply information that can guide organizational leaders through quality improvement processes from the initiation or input, and the implementation of strategies or throughput to outcome. When medics improve the quality of care, it can lead to a decrease in the

prevalence of CAUTIs, improved hospital overall star ratings, and lessen the reimbursement penalties associated with CAUTIs.

Nature of the Study

For this quantitative correlational study, I used secondary data from the CMS Care Compare website to conduct the study. The quantitative correlational design was appropriate for this study because the approach involved an established theoretical framework and analysis for the research. I explored how the prevalence of CAUTIs impacts hospitals' overall star ratings and identified the difference in reimbursement rates for acute care hospitals. The independent variables were hospital overall star ratings and reimbursement rates. The dependent variables were CAUTIs in hospitalized patients in acute care hospitals.

To receive payment from CMS, hospitals must take part in the CAUTI reporting NHSN protocol for the CMS inpatient prospective payment system (CDC, 2019). The leaders of healthcare organizations who take part in data reporting are given guidelines from CMS on how to collect the data. The guidelines were created to support accuracy in reporting.

Literature Search Strategy

A literature review was necessary to get the relevant information for the quantitative study. Using the Walden Library and internet resources, I conducted an extensive literature search in several databases using keywords that aligned with my research title. In addition, I searched for information on the theoretical framework, variables, and dataset. Conducting an extensive literature search gave me a perspective on

the healthcare problem, gaps, and implications for healthcare organizations and healthcare administrators.

The databases that I used for this literature review included CINHAL and MEDLINE combined search, ProQuest One Academic, Google Scholar, and Thoreau Multi-Database Search. The search terms and/or search phrases I used were *CAUTI, hospital quality star ratings, hospital overall star ratings, hospital, acute care hospitals, medical devices, urinary catheters, costs, length of stay, hospital-acquired infections, prevalence,* and *reimbursement.* I limited the literature search to studies or articles that were written and published in the English language. Most of the articles used were limited to dates within the past 5 years, 2018 to 2023. During the search, I included qualitative, quantitative, and mixed-method research articles, in addition to systematic review articles that included reports on HAIs and CAUTIs. I conducted an additional evaluation of the articles to remove those that were not related or contributed to my study.

Literature Review Related to Key Variables

An extensive literature review showed that researchers had conducted several studies about CAUTI. In the literature review and key variables section, I presented evidence on many of the key variables in this study, including CAUTIs, hospital overall star ratings, prevalence and financial impact of HAIs, the prevalence of CAUTIs in hospitalized patients, the impact of CAUTI on LOS, the financial impact of CAUTIs, value-based initiatives in healthcare, and hospital-acquired condition (HAC) reduction program.

CAUTI

During the literature review, I found several methods that were used to collect the data and analyze the variables. Anand et al. (2019) published a study on hospital costs of inpatient harm. For the study, the researchers included inpatient databases from 12 states. The researchers found that HAIs, such as surgical site infections (SSIs) and severe pressure ulcers, were among the costliest and added approximately $30,000 per injury. They reported that the cost for CAUTI ranges from $6,000 to $13,000 per injury (Anand et al., 2019). In another study, Ahmed et al. (2021) discussed the prevalence of CAUTI and its implications. The researchers found that in 2019, the rate of CAUTIs was 1.00 per 1000 catheter days. Ahmed et al. (2021) concluded that healthcare workers were compliant with preventative measures, such as hand hygiene. However, there was a need to expand the awareness of infection-preventative measures to more healthcare workers.

Russel et al. (2019) presented findings from an evidence-based nurse-driven CAUTI prevention program. The researchers found that although there were successes in the implementation of evidence-based practices of daily catheter rounds and the use of Foley magnets, the limitations of organizational policies caused a delay in the implementation of the catheter removal algorithm. In a study by Van Decker et al. (2021), the researchers looked at how the standardization of a CAUTI bundle in the intensive care unit can help in deterring unnecessary catheterization. The above measure had a positive result and saw a reduction in catheterization and incidence of CAUTIs. Over 4 years, the healthcare organizations had a decrease in the number of CAUTIs. In 2013, there were 53 cases and in 2017, there were nine cases.

CAUTI was the most prevalent among the HAIs, with 50–70% preventable (Agency for Healthcare Research and Quality [AHRQ], 2015b). Although many interventions took place, and penalties were imposed by CMS, the reduction of CAUTIs in hospitalized patients presents enormous challenges for healthcare leaders. A quarter of patients admitted to inpatient units have experienced the placement of urinary catheters, and there was no medical necessity for the insertion (AHRQ, 2015b). Researchers Hromatka and Guo (2017) reported that although many studies on CAUTI intervention were conducted, no single intervention was named to be superior. Healthcare providers and leaders of healthcare organizations are responsible for the cost of treating patients who were inappropriately catheterized and developed CAUTIs while under their care (AHRQ, 2015b).

Hospital Overall Star Ratings

In providing the public with visibility on healthcare quality measures, CMS created hospital overall star ratings for healthcare consumers (Kurian et al., 2021). The goal of creating the hospital's overall star ratings was that consumers would have an easy and understandable summary of the different quality measures and how hospitals are performing in the delivery of quality care. CMS has placed quality measures into five groups: mortality, readmission, safety of care, patient experience, and prompt and effective care (CMS, n.d-a.; Hu & Nerenz, 2021). The transparency and accessibility of hospital overall star ratings by CMS make it easy for consumers to find healthcare organizations' performance on quality metrics.

More than 4,500 Medicare-certified hospitals take part in the hospital's overall star ratings (Kurian et al., 2021). CMS uses a seven-step process to calculate the results of the hospital's overall star ratings (CMS, n.d-a). The hospital's overall star ratings results are presented on a scale of one to five stars. The organizations that have five stars are rated the best for quality outcomes, whereas those with one star are the lowest or worst in quality outcomes. The hospital's overall star ratings have measures that are from five measure groups, namely, mortality, the safety of care, readmission, patient experience, and timely and effective care (CMS, n.d.-a). Some of the quality measures that are listed under the safety of care for acute care hospitals are CAUTI, SSIs, clostridium dificile, and CLABSI. CMS has tied hospital reimbursements to quality outcomes and used a five-star rating in ranking different healthcare sectors, such as hospitals and nursing homes (Figueroa et al., 2018).

Healthcare administrators are tasked with the job of applying strategies to reduce the number of infections and support the hospital’s overall star ratings while keeping a budget. CMS is making hospitals' quality metrics and star ratings more accessible to consumers (CMS, n.d.-a; Kurian et al., 2021). The transparency and ease of access of hospital overall star ratings on the CMS Compare website give consumers the advantage in making informed choices of where to go for their healthcare needs. The effect of transparency for organizations can affect volume positively or negatively. Loss of volume will further impact revenue. To mitigate the loss in revenue, hospital administrators must implement processes that will improve the quality of care and reduce the occurrences of CAUTIs within their organizations.

Hospital overall star ratings are valuable to both consumers and healthcare organizations (Hu & Nerenz, 2021). Leaders of healthcare organizations that want to keep lofty standards in delivering quality care can use the CMS overall star ratings to improve processes (Kurian et al., 2021). Because low ratings in quality metrics can harm healthcare organizations, administrators must develop strategies to improve their hospital's overall star ratings. CMS has used hospital overall star ratings in the evaluation of hospitals' quality care. The lack of quality care can lead to patients developing HAIs such as CAUTIs.

Prevalence and Financial Impact of HAIs. Researchers have found that of all the HAIs, CAUTI is one of the most prevalent and impacts patients globally and that the reported rates of CAUTIs vary among countries (Hromatka & Guo, 2017). Treating HAIs can become costly for healthcare organizations. HAIs affect hospitalized patients in many continents, such as Europe, Africa, North America, and Asia. In the United States, 4% of hospitalized patients develop one of the HAIs, whereas in Africa, the prevalence of HAIs is between 2.5 and 14.%. In Europe, 3.2 million patients develop HAIs annually (Ahmed et al., 2021). In 2011, Germany had a prevalence of HAIs of 5.1% (Arefian et al., 2016). Because of the high prevalence of HAIs, there is a great need for interventions that will curtail the rate of infections.

Contracting HAIs can lead to an increase in the mortality and morbidity rate. HAIs are the second-highest prevalent cause of death for hospitalized patients (Ahmed et al., 2021). To reduce the prevalence of HAIs, there are certain behaviors and strategies that the leaders of healthcare organizations and consumers must apply. These include

practicing hand hygiene (washing or sanitizing), sanitizing, and proper cleaning of the environment and equipment (Ahmed et al., 2021). Healthcare leaders also need to take the initiative in supplying the needed personal protective equipment, resources, and education for staff and consumers (Ahmed et al., 2021).

Another factor that has led to the prevalence of HAIs is the overuse of antibiotics (CDC, 2022a). The CDC reported that half of hospitalized patients receive antimicrobial medication daily. Developing antimicrobial resistance can lower the patient's resistance to infections. Russel et al. (2019) found that the unnecessary use of antibiotics increases a patient's hospital bill by $980 to $2,900, and that HAIs are associated with the improper use of antibiotics. Jit et al. (2020) reported that antibiotic resistance is a global health threat. Because of this universal threat, the leaders of healthcare organizations are moving towards the development and implementation of evidence-based practices in the treatment plan for patients. To be compliant and to meet the CMS guidelines for getting reimbursed, hospital administrators must develop and implement preventative strategies that help decrease the prevalence of HAIs.

Vokes et al. (2018) found that a multidisciplinary approach among healthcare professionals can aid in the development of evidence-based protocols that can help in the reduction of HAIs. The implementation of preventative measures can improve the hospital's overall star ratings and decrease financial burdens and loss of revenue created by the reduction of reimbursement by CMS. Achieving better outcomes for hospitalized patients can help to avoid financial penalties associated with poor outcomes.

Prevalence of CAUTIs in Acute Care Hospitals. The vulnerable population in acute care hospitals and other healthcare settings is more prone to developing the infection. Jain et al. (2015) reported that approximately 40% of HAIs are associated with CAUTIs. The infection rate is higher in elderly patients with hip fractures, and those who sustained trauma and have indwelling urinary catheters placed (Elkbuli et al., 2018; Singh et al., 2021). As the elderly population increases, there are increased rates of hospitalization. There is a great chance that the incidence of CAUTIs will continue to rise. The high incidence of CAUTIs and other HAIs has led to a significant economic burden for healthcare organizations (Hegwer, 2019).

In a study on the management and prevention of CAUTI in the intensive care unit, Rahami et al. (2019) concluded that there is a need for more research that looks at the prevalence of CAUTI. The researchers suggested that conducting more studies would give a better insight into the treatment and management of infections. Parker et al. (2017) conducted a study on strategies for reducing the inappropriate use of indwelling catheters. Findings from the study suggested that there is a gap in intervention and limitation of studies in CAUTI prevention. In another study by Sopirala et al. (2018), the researchers highlighted the lack of existing data on CAUTI prevention in hospitals. They also found that the lack of existing data created a problem in showing the deficiencies. Sopirala et al. (2018) concluded that the implementation of strategies by healthcare administrators is necessary for the prevention of hospitalized patients getting CAUTIs.

In a study on the prevention and management of CAUTIs in the intensive care unit, researchers found that more studies need to be conducted because of the significance

and importance of the high prevalence of CAUTIs (Rahami et al., 2019). Having more expenses can be burdensome for all the stakeholders involved, such as patients, family members, and healthcare leaders. The added expenses can affect the organization's finances in the distribution of funds, such as payments for projects and its purchasing power.

Impact of CAUTI on LOS. Getting CAUTIs can lead to an increase in LOS for hospitalized patients (Rahami et al., 2019). An increase in LOS not only adds a burden to the healthcare organization but it increases the stressors and burdens to patients, family members, and the healthcare staff. In 2014, the United States had approximately 35.4 million people admitted to inpatient units (AHRQ, 2020). The report showed that there was an increase in cost because of the unnecessary increase in LOS. Hospital admission takes people away from their families and jobs, in addition to an increase in hospital costs. It can lead to loss of income from the individuals not being able to work. According to Hughes et al. (2021), when the LOS increases, there is an effect on the operations of healthcare organizations. This can lead to an increase in the use of hospital resources and bed occupancy. These factors can make it difficult for leaders to find adequate resources and beds to accommodate patients who need admission to acute care units.

Hughes et al. (2021) analyzed 169,645 inpatient cases to show outliers in LOS. The researchers described LOS outliers as the number of hospitalized patients whose length of admission fell in the top 1% of the Medicare Severity-Diagnosis Related Group (MS-DRG). The findings were that when there is an increase in LOS, it leads to adverse

events and a decrease in quality care. During the research period, January 2014 to December 2019, LOS outliers led to an increase in hospital bed occupancy, increased use of hospital resources, and increased emergency room waiting times that led to the hospital's inability to accept new patients. Because of the impact of LOS and its association with quality of care, CMS uses LOS for benchmarking purposes and to calculate some Medicare payments. Hughes et al. (2021) found that some of the outliers in LOS are associated with complications, comorbidities, socioeconomic status, and primary payers, which can affect an organization's general operation process. The increase in LOS secondary to patients developing CAUTs can leave healthcare organizations in an economically vulnerable situation, due to reduced reimbursement and poor patient satisfaction scores which may affect Medicare reimbursement.

Financial Impact of CAUTI on Healthcare Organizations. In 2008, CMS rolled out the financial consequences that healthcare organizations would receive if patients developed HAIs while getting care in their healthcare organizations. CMS used the Hospital-Acquired Condition Reduction Program (HACRP) to aid in its reimbursement process. HACRP is a value-based program that is used by CMS in linking Medicare payments to inpatient care. Quality care and outcomes are linked to payments (CMS, 2022). After the implementation, the changes in the reimbursement policy had a positive impact on the reduction of CAUTIs and the delivery of healthcare in the United States (Waters et al., 2015 as cited in Cartwright, 2018).

The occurrence of CAUTIs and other HAIs has increased the costs of care and the mortality rate (Vokes et al., 2018). In the United States, the cost of CAUTI ranges

between $340 to $450 million annually (AHRQ, 2015b). In a report (AHRQ, 2018), HAIs contribute to 1.7 million infections and 99,000 related deaths. The report stated that it has led to a financial burden on the healthcare system which accumulates an additional cost of $28 to $33 billion annually. In the United Kingdom, the annual cost of HAIs in the National Health System ranges between 1.6 billion to 5 billion Pounds (Cawthorne et al., 2020). With the continued desire to lower costs and improve outcomes in hospitals and other healthcare organizations, healthcare leaders continue to pursue different strategies toward meeting their goals. One such strategy is the implementation of value-based programs. The literature review contains enormous documentation of the increase in the emphasis on value-based initiatives by healthcare organizations.

Value-Based Initiatives in Healthcare. Value-based care highlights better care for individuals and populations, and the lowering of costs (CMS, 2022a). In 2012, CMS started the hospital value-based purchasing program. The goal was to offer financial incentives to organizations that display excellent patient experience, quality care, and outcomes (Snyder et al., 2020). Although the implementation of value-based programs has shown success in many initiatives and programs, a study by Hsu et al. (2020) highlighted how the researchers investigated the association of hospital value-based programs and HAIs in the safety-net and non-safety-net hospitals. The findings from the study showed that the implementation of value-based programs in safety-net or non-safety-net organizations did not affect HAIs. However, value-based healthcare is multipurpose and supplies benefits for providers, payers, organizations, consumers, and society (NEJM Catalyst, 2017a).

There are many delivery models of value-based programs. Some of these models are Accountable Care Organizations (ACOs) and Patient-Centered Medical Homes (PCMH). Many healthcare administrators are switching their strategies towards taking part in value-based programs. The goal of value-based care is to help deliver quality care and improve patients' outcomes while improving cost efficiency, reducing risks, and building a healthier society (NEJM Catalyst, 2017a). The implementation of value-based care in CAUTI prevention can lead to positive social change by creating care efficiency, lowering healthcare costs, and improving outcomes.

Hospital-Acquired Condition Reduction Program. Under the HACRP, payments by CMS are adjusted when hospitals send claims. The goal of the HACRP is to encourage hospitals to deliver safe quality care and lessen the number of HAIs occurring in hospitalized patients (CMS, 2022c). Under this program, hospital payments from CMS are reduced by one percent if the total of all HACRP scores is greater than the 75th percentile (CMS, 2022b). Payments are adjusted according to the hospital value-based purchasing program, hospital readmissions reduction program, disproportionate share hospital payments, and indirect medical education payments based on the base-operating diagnosis-related group amount (DRG; CMS, 2022c).

Acute care hospitals in the United States that receive payments under the IPPS are included in the HACRP payment (CMS, n.d.-d). However, there is an agreement between the state of Maryland and CMS, which exempts Maryland Hospitals from HACRP payment. The eligible hospitals are evaluated on several measures that are included in the HACRP. Some of the measures are CLABSI, CAUTI, SSI, and C-difficile. CMS

calculates the HAI measures and reports to NHSN (CMS, 2022c). To avoid the reduction in payments, hospital administrators need to meet the requirements outlined by CMS. Hospitals that meet the requirements and are not in the worst-performing quartile are not penalized (QualityNet, n.d.).

Definitions

Accountable Care Organization (ACO): ACO was designed by CMS. The goal is for providers and patients to engage in coordinated care that will supply high-quality medical care. Additionally, it promotes the sharing of data between insurance payers (NEJM Catalyst, 2017b).

Acute care hospital: An acute care hospital is an institution that primarily supplies medical services i.e., diagnostic and treatment in in-patient settings (CDC, 2022)

Catheter-associated urinary tract infection (CAUTI): CAUTI is a urinary tract infection that involves the urinary system within 48 hours after the insertion of a urinary catheter (CDC, n.d.-b).

Centers for Disease Control and Prevention (CDC): The CDC oversees the protection of the public health of the nation. This agency supplies health updates, guidance, and leadership on how to prevent and control infectious diseases, and other health emergencies (CDC, 2022).

Centers for Medicare and Medicaid Services (CMS): CMS is the U.S. federal agency that works with state governments to manage the Medicare program and administer Medicaid and the Children's Health Insurance Program (National Library of Medicine, n.d.).

Hospital-Acquired Condition Reduction Program (HACRP): HACRP is one of the value-based purchasing programs used by Medicare. It provides a connection to Medicare payments and healthcare quality for inpatient hospital settings (CMS, 2023a).

Hospital-acquired infection (HAI): HAI is the occurrence or the development of a new infection in patients while they are receiving healthcare. Common HAIs are CAUTI and central line-associated bloodstream infections (CLABSI; CDC, n.d.-a.).

Hospital quality star ratings: Hospital overall star rating is a system used by the CMS to summarize the results of many quality measures. The summary of the multiple quality measures is combined in a single summary score of one through five and is made available to consumers (CMS, n.d.-b.).

Incidence: Incidence is the frequency with which individuals in a population develop a certain symptom or quality (Hernandez & Kim, 2022).

Inpatient Prospective Payment System (IPPS): IPPS is a payment system proposed by CMS in which a base rate is projected for inpatient admission according to diagnosis. The payment looks at the amount of hospital resources that are used during the treatment of patients. This payment system will take into consideration the severity of the illness, the difficulty of service, and the number of resources used (CMS, 2023b).

Morbidity: Mortality is the state of being unhealthy or symptomatic for a disease or condition (Hernandez & Kim, 2022).

Mortality: Mortality is the number of deaths caused by an illness or a condition (Hernandez & Kim, 2022).

National Healthcare Safety Network (NHSN): NHSN is the most often used tracking system for HAIs. This network supplies data that can help healthcare administrators find problems, measure the progress of preventative strategies, and cut HAIs (CDC, 2022).

Outcomes: Outcomes are the result of health care or intervention received from health care services and the health status of patients (AHRQ, 2015a).

P*latykurtic Distribution*: A platykurtic distribution occurs when the center of the curve is shorter than that of a normal distribution. In this distribution, the tail will have fewer values than that of a normal distribution and they are lighter because they do not have many values falling there (Feldman, 2022).

*Population: The p*opulation is the groups, individuals, or objects that the researcher has an interest in (Frankfort-Nachmias et al., 2021).

Prevalence: Prevalence is the proportion of a population who have a specific characteristic in a specified time (National Institute of Mental Health [NIMH], n.d.)

Quality: Quality is 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 (Institute of Medicine, 2013).

Socioeconomic status: Socioeconomic status is a description of people based on their education, income, and type of job. Socioeconomic status can fall into the low, medium, and high categories. People who are in the lower socioeconomic status usually have less access to financial, educational, social, and health resources while those in the

higher socioeconomic status have more resources to meet their needs (National Cancer Institute, n.d.).

Value-based healthcare: Value-based healthcare is a delivery model in which healthcare organizations and providers are reimbursed according to the patient's health outcomes. Care providers get compensated when the patient's health outcomes show improvement (Teisberg et al., 2020).

Assumptions

Before conducting the study, I made some assumptions. One of the assumptions was that individuals who are in better health or those who have better economic statuses would be less likely to get CAUTIs. The next assumption was that the prevalence of CAUTIs tends to be higher in the vulnerable population. Another assumption was that the prevalence of CAUTI does not have an impact on the hospital's overall star ratings.

Scope and Delimitations

The scope of the study was limited to patients in acute care hospitals in the United States who had a diagnosis of CAUTI. This did not include patients who were discharged and who later developed CAUTIs. I used secondary data from the CMS Care Compare website in the study. The data was collected by HSHN. This information is publicly available on the CMS hospital compare website for consumers' viewing. The transparency strategy used by CMS is to help consumers make informed decisions when choosing healthcare facilities to receive care (CMS, 2021). The data were without manipulation. Limiting the scope to a specific population might have had limitations and

prevented a more robust conclusion on the impact of the prevalence of CAUTIs on hospital overall star ratings and reimbursement rates.

Limitations

A potential weakness of this study was that I was not in control of the collection of the data. I used secondary data that was obtained from the CMS Care Compare website. The collection of secondary data is performed by others, which makes it difficult to show if there are biases or accuracy of collection. Another weakness was that the study focused only on inpatients in acute care hospitals in the United States. In addressing the limitations of this study, two measures that can be helpful are looking for ways how the limitations can lead to gaps for future research, and addressing how the limitations affect the overall findings of the study.

Significance

Conducting this study was significant because the findings may add to the existing body of information on the relationship between hospital overall star ratings, the prevalence of CAUTIs in hospitalized patients in acute care hospitals, and the financial implications. The results of this study may supply information that will help to support some of the strategies used by healthcare administrators in combating the prevalence of CAUTIs. Preventing CAUTIs and other HAIs in hospitalized patients is one way that healthcare organizations can prevent negative branding and reduction in reimbursements from CMS. This quantitative study aimed to address the gap between the prevalence of CAUTIs in hospitalized patients, the impact on hospital overall star ratings in acute care hospitals, and the financial implications for healthcare organizations.

Significance to Healthcare Practice

Hospital administrators can use the findings to implement strategies for preventing preventable diseases, such as CAUTI. Hospitalized patients with CAUTIs affect reimbursements by CMS, increase LOS, increase mortality and morbidity rates, impact outcomes, increase costs, and can jeopardize the hospital's overall star ratings. Researchers have found that CAUTIs have led to an increase in morbidity and mortality rates, increased LOS, and increased cost (Backman et al., 2021). These variants can negatively change the hospital's overall star ratings and patient experience of their hospital care. According to Maurer et al. (2021), hospitals are struggling to find solutions for the prevention of HAIs. The researchers said that the acquisition of HAIs is concerning for hospital administrators and policymakers. To mitigate the struggles associated with the acquiring of HAIs, healthcare administrators can use the findings to create standard work and protocols for the prevention of CAUTIs.

Multiple research findings have shown that preventing CAUTIs from occurring will improve patients' outcomes, decrease costs, and avoid potential legal implications (Cervantes & Hei, 2022). To avoid potential lawful consequences and loss of revenue, healthcare administrators can use the evidence to create process improvement strategies for staffing plans for patients' acuity, develop plans for patient-staff ratio for the vulnerable population who are at higher risks of having urinary catheters placed, and develop other HAIs. The information can also be used in the education of hospital staff on the prevention of CAUTIs and other HAIs.

Significance to Policymakers

The results of this study can provide useful information for healthcare administrators and policymakers as they implement strategies to mitigate the prevalence of CAUTIs and prevent the financial penalties associated with CMS reduction in payments for HAIs. According to Joynt-Maddox et al. (2017), the creation of new payment models presents challenges for policymakers when creating new payment models. The authors said that policymakers encounter challenges in decision-making in designing programs to measure and reward organizations that are efficient in quality outcomes and cost savings. Therefore, policymakers can include the statistical findings from this study as references when creating modern designs on payment models. Other benefits are that stakeholders can use the information and findings from this study when making presentations, writing policies, and developing programs, such as value-based initiatives and HAI reduction.

Significance to Social Change

When focusing on social change, the findings from this study can be helpful in many aspects, from the implementation of comprehensive and supportive programs to the monitoring of outcomes in the affected population. Healthcare administrators and policymakers can develop strategies to improve hospital overall star ratings, develop a plan on staffing for bed occupancy, develop quality initiative programs, and develop policies for the use of urinary catheters in hospitalized patients. It will also help healthcare administrators to be better able to take part in value-based incentive programs. In the long term, these improvement plans will eventually help healthcare administrations

reduce many of the bottlenecks and help their organizations to be compliant with CMS requirements. Other advantages include reducing unnecessary costs, decreasing the LOS, and improving the lives of hospitalized patients in acute care hospitals and other healthcare facilities.

Summary and Conclusions

Although CAUTI is a preventable disease, it continues to affect many hospitalized patients worldwide. The prevalence of CAUTI continues to rise and is posing significant threats to the lives and well-being of patients. CAUTI causes extra financial and occupancy burdens for healthcare organizations. According to Anand et al. (2019), the injuries caused by the acquisition of HAIs not only impact patients and families but also add an enormous financial burden to the U.S. healthcare system. Ferguson (2018) pointed out that the cost of the treatment of CAUTI is not reimbursable. Because of the nonpayment from CMS, healthcare organizations must absorb the cost of many of the HAIs (Hegwer, 2019).

The lack of reimbursement has prompted many healthcare organizations to implement preventative measures, such as staff education, CAUTI bundles, and leadership rounding. Throughout the literature review, researchers have highlighted many of the preventative measures that were implemented by healthcare leaders in CAUTI prevention (Landerfelt et al., 2020; Maurer et al., 2021; Parker et al., 2017). The researchers have found that although the implementation of preventative measures has led to a decline in the prevalence of HAIs, there is evidence showing an increase in hospitalized patients getting CAUTIs.

The increase in the LOS, the costs of treating the disease, and the penalty of reimbursement rates for healthcare organizations that are low performers in infection prevention are issues that healthcare administrators must address. The treatment of CAUTI is costly and can lead to financial implications and other medical complications, such as antibiotic resistance (Hegwer, 2019; Russel et al., 2019). The occurrence of CAUTI is still an ongoing problem for healthcare administrators. According to Hromatka and Guo (2017), there is no single preventative mediation that is superior.

The prevalence of CAUTIs and other HAIs continues to threaten the financial survival of healthcare organizations and the well-being of patients (Vokes et al., 2018). Preventing the disease will help to decrease negative outcomes, such as higher healthcare costs and the rise in mortality and morbidity rates. The acquisition of CAUTI, which can be life-threatening, has profound financial implications for healthcare organizations, such as loss of revenue. CAUTIs can also affect outcomes at the patient and system levels (Hegwer, 2019).

The findings from this study have the potential to supply more information on how the prevalence of CAUTIs can affect the relationship between hospital overall star ratings and reimbursement rates. Having this information can help healthcare administrators in the implementation of strategies to improve outcomes, prevent reimbursement penalties, decrease LOS, and develop staffing plans for bed occupancy. The quality of care that hospitalized patients receive can prevent the acquisition of HAIs, such as CAUTI. This study aimed to explore if there is a relationship between hospital

overall star ratings and CAUTIs for hospitalized patients in acute care hospitals and the financial implications because of the reduction in reimbursement rates.

Section 2: Research Design and Data Collection

Introduction

In Section 1, I presented information on the impact of CAUTIs, strategical interventions by hospital administrators, and the financial implications for healthcare organizations. Although several interventions were noted throughout the extensive literature review, I noticed that there were gaps in the literature on hospital overall star ratings and the impact on healthcare organizations' financial status. The need for more research is essential. The purpose of this quantitative correlational study was to explore the impact of hospital overall star ratings and the financial implications imposed by CMS on acute care hospitals when patients develop CAUTIs.

The independent variables in this study were hospital overall star ratings and reimbursement rates, and the dependent variables were CAUTIs and hospitalized patients in acute care hospitals. For the first question in this study, I determined if there is a relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals. For the second question, I examined the differences in the reimbursement rates for acute care hospitals with high incidences of CAUTIs.

The major sections for Chapter 2 are the research design, methodology, sampling, instrumentation, operationalization of constructs and variables, data analysis, threats to internal and external validity, ethical procedures, and a summary.

Research Design and Rationale

For this study, I used secondary data from the CMS Care Compare website. The research design was a descriptive correlational design. This research design was appropriate because it is used for statistical measurement and the description of the relationships between the independent and dependent variables. According to Bhandari (2023), correlational designs are used to assess the strength of the relationship between variables. I answered both questions using the correlational research design to measure the relationship between the independent and the dependent variables. In a positive relationship, the variables change in the same direction, in a negative relationship the variables change in an oppositive direction and if there is zero correlation, there will be no relationship between the variables (Bhandari, 2022).

The first research question was designed to explore if there is a relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals. The second research question was designed to determine whether there is a significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs. The independent variables (hospital overall star ratings and reimbursement rates) and the dependent variable (hospitalized patients in acute care hospitals with CAUTIs) were developed so that I could address two of the gaps I found during the literature review.

Methodology

The quantitative correlational study included data on CAUTIs for patients admitted to acute care hospitals in the United States for fiscal year 2023. I obtained the

information from the CMS Care Compare website. The purpose of this quantitative correlational study was to explore the impact of hospital overall star ratings and the financial implications imposed by CMS on acute care hospitals when patients develop CAUTIs. The results of the study can contribute to the knowledge and inform healthcare administrators of strategies that can be implemented to prevent financial penalties from CMS and other payers when hospitalized patients develop HAIs.

Population

The target population for this study was hospitalized patients diagnosed with CAUTIs and admitted to acute care hospitals in the United States and reported through CMS. NHSN collected the data from participating hospitals annually. The total number of acute care hospitals in the United States that took part in the NHSN data collection and submission process of CAUTI was 3,774, as shown in Table 1 (CDC, 2023b). The data collection had exclusion criteria for the selected population. Because the CMS report includes other HAIs, I only selected the target population for use in the data analysis in this study.

Table 1

Characteristics of Acute Care Hospitals Reporting to NHSN, 2021

Characteristics	2021 Statistics
Number of facilities reporting to NHSN[1]	3,917
Total Number of hospital admissions	36,298,845
Median number of beds	131
Mean number of beds	188
Median number of ICU beds	14
Mean number of ICU beds	30
Total number of acute care hospitals reporting CAUTIs	3,774

Sampling and Sampling Procedures Used to Collect Data

For healthcare organizations to receive payments from CMS, they must report data on some of the infections that occurred in their healthcare facilities. Organizational leaders send the data collected to NHSN and CDC. NHSN supplies strict guidelines and a mapping checklist for acute care hospitals taking part in the CMS Hospital Inpatient Quality Reporting System (IQR; CDC, 2021). Hospitals or other healthcare organizations that take part in the IQR must report many of the HAIs to CMS. CAUTIs are among the reportable HAIs. The strict guidelines in the collection process help to keep the accuracy of the data collection. Healthcare organizations that meet the CMS reporting criteria must send complete and correct data to NHSN.

To ensure consistency and accuracy with data collection, participating hospitals must enroll auditors to take part in NHSN training. The training meets the compliance required by CMS and IQR Program HAI reporting (CMS, n.d.-c). In 2011 and 2013, CMS published final rules in the Federal Register for the reporting of CAUTIs from acute care hospitals through the CDC and NHSN (CDC, 2019). Healthcare organizations that do not meet a minimum of one of the device-associated HAI locations specified by CMS, must send an Inpatient Prospective Payment System (IPPS) Measure Exception Form to CMS. This process is to ensure that the organization meets the HAI reporting requirements (CDC, 2021).

Hospitals taking part in the CMS IPPS Hospital IQR Program can submit CAUTI data (CDC, 2016). To meet the submission eligibility, the patients must have a medical diagnosis of CAUTI. The excluded contributors are those who did not have a diagnosis of CAUTI. The organizations that take part in the reporting programs through CMS can send the report through the NHSN secure, internet-based surveillance system that is managed by the Division of Healthcare Quality Promotion (DHQP) at the CDC (NHSN, 2022).

I obtained secondary data for this quantitative study from the CMS Care Compare website. The website is a free government internet site that is easily accessible to the public, such as healthcare leaders and consumers. The CMS Care Compare website is consumer-oriented, and it supplies information on the quality of care for healthcare organizations (CDC, 2022a). There is no special permission to access the data set from

the CMS Care Compare website. This dataset included many of the other HAIs, such as SSIs, CLABSIs, and C. difficile. The NHSN data was for the fiscal year 2023.

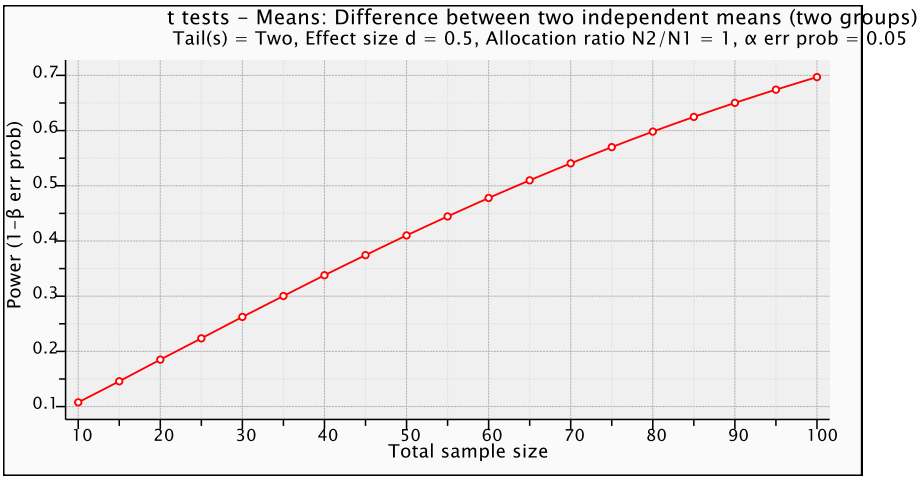
To calculate the smallest sample size for this study, I used a G*Power version 3.1.9.7. The G* Power version is a suitable tool for finding sample sizes. The two-tailed *t*-test and statistical means difference between two independent means two groups with parameters of alpha level (α) set at 0.05, the effect size of 0.5, and sample sizes at 100 each for both groups.

In deciding the effect size, alpha (α), and power level for this study, the effect size is set at the moderate effective of 0.5, while the α is set at 0.05. I used Cohen's model as a guide for choosing the effect size. A small effect size is 0.2, and a moderate effect size is 0.5, while a large effect size is equal to or greater than (≥) 0.8. Effect size shows the differences between groups and communicates the report in statistical units, such as standard deviations (Leppink et al., 2016). An α of 0.05 is the level of probability at which the null hypothesis is rejected. A smaller *p*-value of ≤ 0.05 is a good sign to reject the null hypothesis and accept the research hypothesis (Frankfort-Nachmias et al., 2021).

Based on the G* Power analysis, a sample size of 100 hospitalized patients with CAUTIs supplied sufficient power to answer the research questions. A sample size of 100 achieves power (1-β err prob) = 0.94 which is above the minimum threshold of 0.80, as shown in Figure 1. Hence, the post hoc parameters of the two-tailed *t*-test, with a medium effect size of 0.5, α of 0.05, and sample sizes of 100 are sufficient.

Figure 1

*G*Power Analysis Calculating Sample Size*



Instrumentation and Operationalization of Constructs

NHSN is one of the nation's most used tracking systems for collecting data on HAIs (CDC, 2022a). All NHSN users must follow the reporting requirements for CAUTIs, such as denominator data (patient days and catheter days), all urinary catheter-related urinary tract infections (symptomatic and asymptomatic), and from the patient care location (CDC, 2019). Healthcare leaders can get information on their organization's quality metrics from the data posted on the CMS Care Compare website. They can also compare their quality data with other hospitals, and they can use the information for benchmarking or other program development for their organizations.

Operationalization and Data Analysis Plan

I used the SPSS statistics software to analyze the data to help me in answering the research questions. This statistical software works with many kinds of computer files and can recode and compute variables and analyze descriptive data. It also gives the results of the data in tables, graphs, or chart format (Wagner, 2020). Because the data set includes multiple other HAIs, scrubbing the other HAIs was necessary before analyzing the CAUTI data.

Researchers have used the SPSS statistical software to run Pearson's correlation tests for research purposes. I used IBM SPSS statistics to run Pearson's correlation for statistical analysis of the independent and dependent variables. Pearson's correlation is often used when there are interval-ratio variables. It is designed to assess the strength, direction, linearity, and significance of a relationship between two continuous variables (Kent State University, 2023). The measurement is done on a scale of 0.01 to $\pm$ 1.0. A perfect positive association between two variables is identified by $\pm$1.0, while a 0.0 signifies that there is no correlation between the variables (Frankfort-Nachmias et al., 2021).

To determine if there was a bivariate normality for each of the variables in the study, I used the Shapiro-Wilk test. The Shapiro-Wilk test can be used for small and large sample sizes (Laerd Statistics, n.d.). With this test, the null hypothesis indicates the data are normal and the alternative hypothesis indicates the data are not normal. A significance value of greater than 0.05 is a normal test (Laerd Statistics, n.d.).

Descriptive statistics summarize and present the essential characteristics of the study variables, including means, variability, measures of central tendency, standard deviations, and frequency distributions (Cooksey, 2020). I identified the skewness and kurtosis of the study variables in the descriptive analysis. The skewness looks at symmetry in the distribution while the kurtosis looks at the "tailedness" of the distribution, and helps determine if the tails are heavy or light (National Institute of Standards & Technology, n.d.)

Research Questions and Hypotheses

RQ1: What is the relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals?

$H_0$1: There is no statistically significant relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals.

H_a1: There is a statistically significant relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals.

RQ2: Is there a significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs?

$H_0$2: There is no statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

H_a2: There is a statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

Threats to Validity

Internal and External Threats to Validity

The validity of a study can be affected by internal and external threats. An internal threat can be the accuracy of the collection process whereas an external threat is a sampling bias (Streefkerk, 2022). Although NHSN gave detailed instructions on how to perform data collection and entry in the database, there is the internal threat of error in the collection and entry process. Entering data can take place manually or electronically. However, validation of new electronic systems is essential because errors can occur that can lead to inaccuracy of the denominator (CDC, 2023a). Another internal threat to validity is the lack of consistency in the reported scores because of errors in the measurement of the variables.

An external threat to the validity of data is external influences and variations. For example, if there are no set standards for when information is entered, it can lead to sampling error. The information should be collected on a designated day of the week and at the same time during the month (CDC, 2023a). Standardizing collection dates and times can help to prevent errors that can pose threats to the validity of the data and results.

Ethical Procedures

Walden University has written guidelines on ethical considerations that students taking part in research studies must follow. It is a requirement that all students pursuing doctoral-level programs should obtain ethical approval from the Walden Institutional Review Board (IRB) before advancing to data collection, recruiting participants, or

accessing datasets. The methodology chapter must be approved by all faculty committee members before the student can continue with the study (Walden University, n.d.). The IRB members make sure that all research conforms with Walden ethical standards and the U.S. Federal regulations.

For this study, I used secondary data, which I obtained from the CMS Care Compare website. When collecting the data, I made sure that the information had no patient identifiers. The participants were anonymous and there were no potential ethical violations. Data from the CMS Care Compare Database is available to the public and there is no charge associated with using it.

Summary

Although CMS and other regulatory agencies hold healthcare administrators accountable when patients in their care develop CAUTIs or other HAIs, many challenges still exist in mitigating the prevalence. In collaboration with NHSN and CDC, CMS developed a quarterly tracking system where healthcare organizations must send data on CAUTIs. Submission of data is in numerical form. For example, if there are no incidents, the organization will enter zero, and if there are incidences of CAUTIs, the number of infections will be entered. The data is collected with integrity and strict guidelines are followed for the collection and submission process. Also, CMS made the results easily accessible for all (consumers, and healthcare workers) to view.

Consumers can view the data on the CMS Care Compare website. Undesirable scores can affect healthcare organizations' reimbursement and consumers' usage of healthcare facilities. CMS reports the hospital's overall star ratings from one to five stars.

Healthcare organizations that generate one star are performing the worst for the selected quality measures, while three stars are average, and five stars are the best (CMS, 2023c).

Section 2 contained information on the research design and the reason the study was conducted. It has information on the sample size, population, analysis of the variables, ethical procedures, and threats to validity. The section also contains information on the method that CMS used in collecting data. Using G*Power 3.1.9.7, I was able to find the smallest sample size needed for this study. The quantitative correlational descriptive design allowed me to measure the independent and dependent variables to see if a relationship or difference exists between the variables. In the next segment, Section 3, I will address the data collection of the secondary data set and present the statistical findings of the research questions and hypotheses.

Section 3: Presentation of the Results and Findings Section

Introduction

In Section 2, I looked at the research design, methodology, sampling, instrumentation, operationalization of constructs and variables, data analysis, threats to internal and external validity, and ethical procedures. In Section 3, I will present information on the data collection and analysis of the secondary data and conclude with a summary. The purpose of this quantitative, correlational study was to explore the impact of hospital overall star ratings and the financial implications imposed by CMS on acute care hospitals when patients develop CAUTIs.

This study had two research questions. I created the first research question to address the relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals. I created the second research question to determine whether there is a significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

Data Collection of Secondary Data Set

I used secondary data obtained from the CMS Care Compare website. The CMS website was pivotal as the primary data source for my research project because it allowed access to datasets of fundamental significance for my study. This thorough site houses abundant medical care-related data and incorporates different datasets pertinent to medical care suppliers, including clinics, hospitals, and nursing homes. The significance of CMS analyzing information in the review is highlighted by the capacity to give top-to-bottom experiences in healthcare execution. This is especially central while exploring the

event of CAUTIs and their connection with hospital overall star ratings, and reduction in reimbursement rates. Access to these datasets allowed me to explore and analyze crucial aspects of healthcare quality measures about CAUTIs.

After receiving IRB approval from Walden University (IRB approval number 09-01-2023-1063017), I acquired data from the CMS Care Compare website. I presented the information on Excel spreadsheets. The period for the secondary data collection was fiscal year 2023. CMS collaborates with NHSN and the CDC for the collection of data. The data set contained many of the other HAIs along with the variables for my research study. The report contained the variables for my study, which included hospital overall star ratings, reimbursement rates, and prevalence of CAUTIs. Before analyzing the data, I performed scrubbing to remove unneeded variables, hospital names, and any hospital that did not report the three variables needed for the study.

An advantage of using secondary data sources is that it does not require direct collaboration with human subjects. Another benefit to obtaining the CMS data source is that it is free and easily accessible to the public. Healthcare administrators can obtain and recover significant datasets from the CMS Care Compare website, making it an essential asset for medical services-related investigations.

I used convenience sampling for this study. I chose convenience sampling because of the practical access to data through the CMS Care Compare database. Given the number of hospitals in this database across the United States, convenience sampling is a practical and feasible approach. The approach exceeded the sample size of 100 that was deemed to be appropriate by the G*Power analysis conducted in section 2. Another factor

that led to the use of convenience sampling is the effect of the COVID-19 pandemic on certain measures. CMS created a policy to pause the use of data for several measures impacted by the pandemic, which led to some scores not being calculated or not available (CMS, 2023c). A convenience sample aligned with my objective of broadly exploring the relationship between CAUTIs, hospital overall star ratings, and reimbursement rates by using readily available data from the CMS Care Compare website. I used this approach to examine a broad cross-section of hospitals without the constraints often associated with more complex sampling methods. Convenience sampling is used to ensure that a researcher can efficiently access and utilize ample data to address the research questions (Jager et al., 2017).

While focusing on the sample size, the goal was to include all eligible hospitals within the CMS Care Compare database, which represented a sizable portion of the U.S. healthcare setting. I incorporated all eligible hospitals to ensure a large sample size for all the variables. According to (Frankfort-Nachmias et al., 2021), larger sample sizes have smaller standard errors.

The datasets I obtained were Hospital General Information and HACRP Hospital. After downloading the secondary datasets from the CMS Care Compare website, I took several steps before merging the Excel files and uploading them into SPSS. The next step was removing unnecessary variables from the files that contained CAUTIs, reimbursement rates, and hospital ratings. I left the facility ID because it was needed to merge the files. Another step was removing the "not-available (N/A)" words from the file and leaving the cells blank to indicate missing data. I then uploaded these files to SPSS to

merge them. The merging of the files was based on Facility ID so that each facility had a corresponding CAUTI, reimbursement rate, and hospital overall star rating value. After uploading and merging the files in SPSS, I proceeded to perform the analysis of the data using IBM SPSS Statistics. The key variables that I examined were CAUTIs (dependent), hospital overall star ratings, and reimbursement rates (independent).

Results

Statistical Analysis

I used descriptive and inferential statistical methods to analyze the data in this study. In descriptive statistics, researchers summarize and present the essential characteristics of the study variables, including means, variability, measures of central tendency, standard deviations, and frequency distributions (Cooksey, 2020). Descriptive statistics can also highlight information that can assist researchers in describing data that are obtained from a sample or a population (Frankfort-Nachmias et al., 2021). The descriptive statistics highlight any issues with the normality of the continuous variables by addressing the skewness and kurtosis values. The report outlined the three inferential statistics used. It highlighted an overview of the test, information on the assumptions and how they were evaluated, and the results of the inferential analysis.

Interpretation of the Descriptive Statistics

I have outlined the descriptive statistical analysis in Table 2. There are 2517 cases for hospital overall ratings and reimbursement rates, and 2097 cases for CAUTIs. The infection rates reported for CAUTI are between 0.00 and 6.20 (M = 0.91, SD = 0.07). Most hospitals had an average score of 3. The reimbursement rates reported for insurance

claims are between 0.74 and 1.37 (*M* = 0.99, *SD* = 0.07). The hospital's overall star ratings scores are between 0 and 5 (*M* = 3.13, *SD* = 1.17). There are no issues regarding the skew for all the variables. Based on the skew values of the variables, they are normally distributed. Therefore, there was no skewness present. However, there appears to be a kurtosis issue in CAUTI rates. It shows that the distribution is platykurtic.

Table 2

Descriptive Statistics

	Descriptive Statistics								
						Skewness		Kurtosis	
Variables	*N*	Min.	Max.	*M*	*SD*	Statistic	*SE*	Statistic	*SE*
CAUTI	2097	0.00	6.20	0.91	0.78	1.88	0.05	5.66	0.11
Reimbursement Rates	2517	0.74	1.37	0.99	0.07	0.29	0.05	1.44	0.10
Hospital Star Rating	2517	1.00	5.00	3.13	1.17	-0.05	0.05	-0.86	0.10

Note. *N* denotes sample size, *M* denotes mean, *SD* denotes standard deviation, and *SE* denotes standard error.

Researchers use inferential measurements, including relapse investigation, connection, and speculation testing, to investigate the connections between factors by observations and analysis of the sample (Frankfort-Nachmias et al., 2021; Hennink & Kaiser, 2022). Relapse examination is instrumental in evaluating how hospital overall star ratings and reimbursement rates communicate with the occurrence of CAUTIs. Correlation examination takes into consideration the assessment of the strength and bearing of the connection between factors.

There are five assumptions of the Pearson correlation: The variables are measured continuously or on interval and ratio scales, the variables are paired, and linearly related, there are no outliers, and each of the variables is normally distributed (Zach, 2021). I used the first assumption testing to survey the meaning of these relationships. I measured the variables (CAUTIs, reimbursement rates, hospital overall ratings) continuously, and the scale of measurement was along a continuum. The findings showed that this assumption was met.

Next, the variables must be paired or matched. This means if there is a rating for one variable, then there should be a rating for the other variable. CAUTIs matched reimbursement rates and hospital overall star ratings for 2,097 cases, meeting these assumptions as shown in Table 2. In a linear relationship, the two variables (CAUTI and reimbursement rates and CAUTI and hospital overall star ratings) should be linearly related. In a linear relationship between two interval-ratio variables, the relationship can be represented by a straight line (Frankfort-Nachmias et al., 2020; LibreTexts, 2023). I used scatterplots to evaluate the assumption between the variables that are depicted in Figure 2 and Figure 3. The scatterplots indicate that this assumption was met, and the variables are linearly related to each other.

I evaluated the impact of outliers to make sure that no single point had undue influence on the obtained results. Based on the scatterplots in Figure 2 and Figure 3, no outliers were identified. In Figure 2, the independent variable (reimbursement rate) and the dependent variable (CAUTI), showed that the variables are linearly related to each

other. The scatterplots indicate that the assumption was met, and the two variables are linearly related.

Figure 2

Scatterplot of CAUTIs and Reimbursement Rates

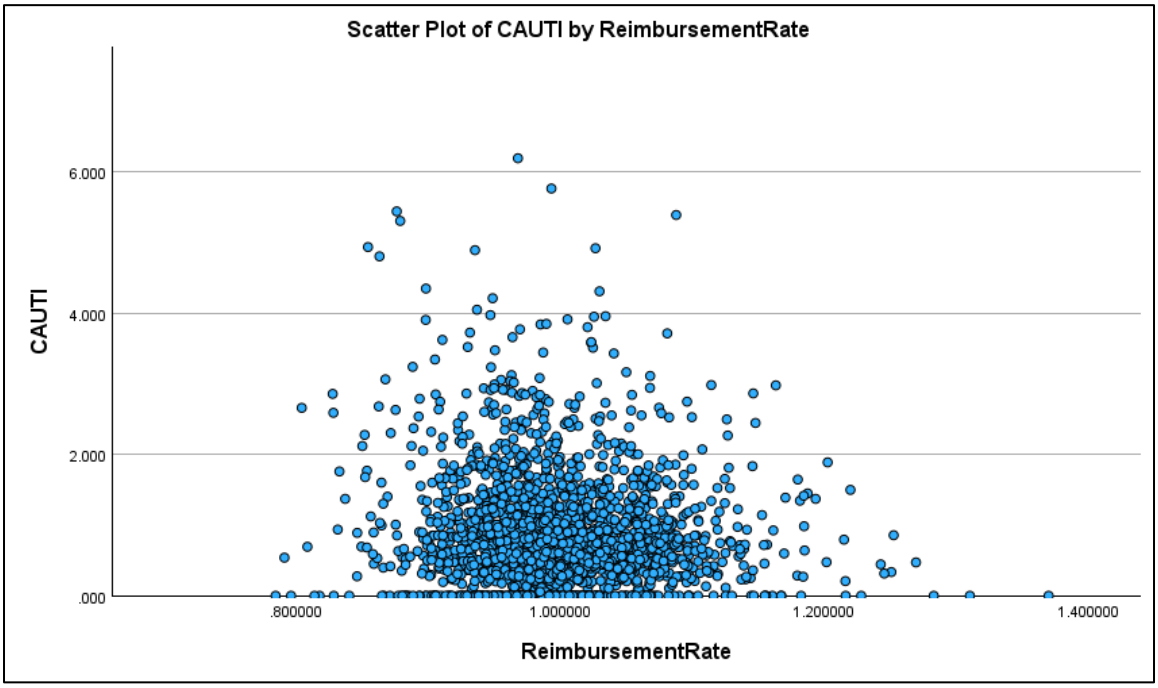
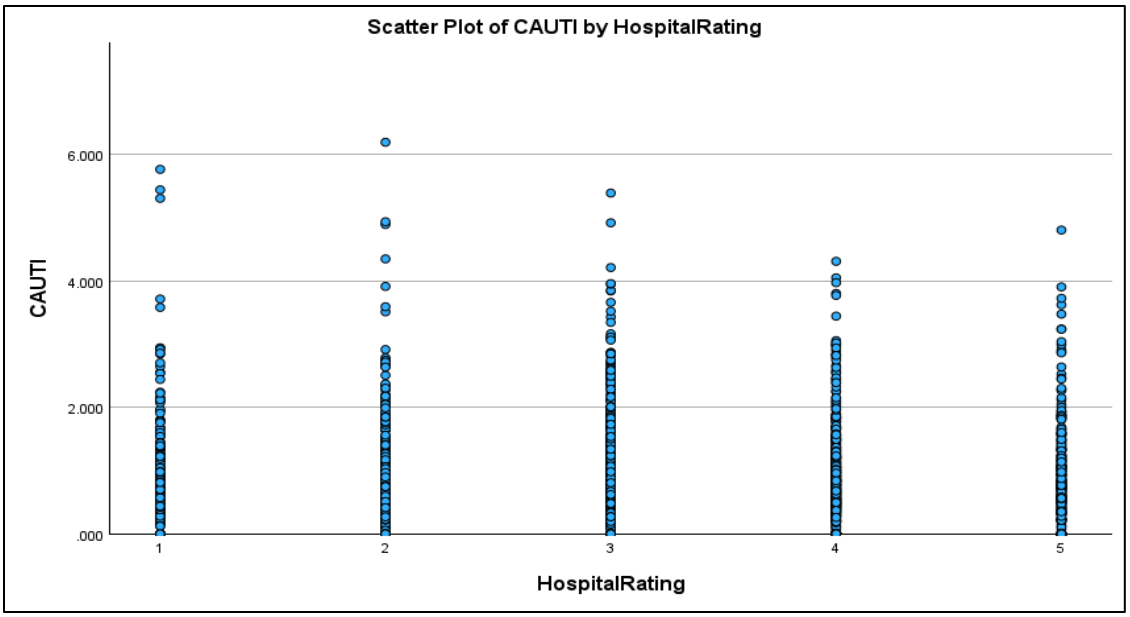


Figure 3 is a scatterplot diagram of CAUTI and the hospital's overall star ratings (independent variable). It indicates that no outliers were identified between the two variables. The evaluation of the impact of outliers for this analysis is to ensure that no single point has an undue influence on the results.

Figure 3

Scatterplot of CAUTI and Hospital Overall Star Ratings



Normality

The last assumption was normality. I determined if there was bivariate normality in each of the study variables. This meant that each of the variables would be normally distributed. Table 3 shows how I used the Shapiro-Wilk test to evaluate the assumption of normality. The null hypothesis indicates the data are normal and the alternative hypothesis indicates the data are not normal. A *p*-value to indicate normality would be $p > .05$. As noted in Table 3. The significance of the value of all three variables (CAUTIs, reimbursement rates, and hospital overall star ratings are below 0.05, $p = <.001$. The variables are not normally distributed and violate the normality assumption.

Table 3

Shapiro-Wilk Test of Normality

	Shapiro-Wilk Test of Normality		
	W	df	*p*
CAUTI	0.85	2097	<.001
Reimbursement Rates	0.98	2097	<.001
Hospital Overall Star Rating	0.92	2097	<.001

Note. *W* refers to the Shapiro-Wilk test statistic, df refers to the degrees of freedom, and *p* refers to the p-value

Interpretation of the Pearson's Correlation Test

I used the Pearson correlation test to assess the strength and significance of the relationship between two continuous variables (CAUTI and hospital overall star ratings, and CAUTI and reimbursement rates) as shown in Table 4. The findings for CAUTI and hospital overall star ratings showed that there is a weak, linear, and non-significant correlation between CAUTI and hospital overall star ratings, $r(2097) = -.02$, $p = .334$, 95% CI [-.06, .02] (Table 4). This indicates that there is no relationship between CAUTIs and hospital overall star ratings. For RQ1, I failed to reject the null hypothesis.

The findings between CAUTIs and reimbursement rates showed that there is a negative, weak, linear, and significant correlation between CAUTIs and reimbursement

rates, $r(2097) = -.11$, $p<.001$, 95% CI [-.15, -.06] (Table 4). This indicates that there is a correlation between the independent and dependent variables, and as CAUTIs increase, reimbursement rates decrease. Therefore, for RQ2, I reject the null hypothesis that there is no statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

Table 4

Pearson's Correlations Between Variables

	Correlations		
	CAUTI	Reimbursement Rates	Hospital Overall Star Rating
CAUTI	-		-.021
Reimbursement Rates	-.11**	-	
Hospital Overall Star Rating	-0.02	.06**	-

Note. ** $p < .001$*

SPSS Results for the Research Questions

RQ 1

RQ1 sought to address whether there is a relationship between hospital overall star ratings and the prevalence of CAUTIs in hospitalized patients in acute care hospitals. There were 2,517 cases of hospital overall star ratings and 2,097 CAUTIs as shown in Table 2. The infection rates for CAUTIs are between 0.00 (minimum) and 6.20 (maximum), ($M = 0.91$, $SD = 0.78$). A mean of 0.91 indicates the proportion of CAUTI.

A *p* value = .334. Pearson correlation suggested with a 95% confidence interval level that there was no significant relationship between the independent variable (hospital overall star ratings) and the dependent variable (CAUTIs). Accept the null hypothesis and reject the alternative.

RQ 2

RQ2 focused on whether there is a significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs. The sample size for reimbursement rates was 2,517 and 2,097 for CAUTI. The reimbursement rates reported for insurance claims are between 0.74 (minimum) and 1.37 (maximum), (M = 0.99, SD = 0.07) as shown in Table 2. A mean of 0.99 denotes the reimbursement rates per proportion of CAUTI. A P value of $P < .001$ is statistically significant. Reject the null hypothesis and accept the alternative that there is a statistically significant difference in the reimbursement rates by CMS for acute care hospitals when patients develop CAUTIs.

Summary

In Section 3, I covered data collection of secondary data, statistical analysis, and interpretation of the findings for the research questions. I highlighted the findings using tables and graphs. Answers to the research questions showed that there is a significant correlation between the prevalence of CAUTIs and reimbursement rates. As the number of CAUTIs increases, the reimbursement rates by CMS decrease. The prevalence of CAUTIs did not impact the hospital's overall star ratings. The results showed that there was no significant statistical relationship between CAUTIs and hospital star ratings. In Section 4, I will present an interpretation of the findings in the context of the theoretical

framework, limitations of the study, recommendations for further research, implications for professional practice and social change, and end with a conclusion.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this quantitative correlational study was to explore the impact of hospital overall star ratings and the financial implications imposed by CMS on acute care hospitals when patients develop CAUTIs. I explored how the prevalence of CAUTIs impacts hospitals' overall star ratings and the difference in reimbursement rates to acute care hospitals. The independent variables were hospital overall star ratings and reimbursement rates, and the dependent variable was CAUTIs. I used IBM SPSS statistical analysis to examine the relationship between the independent and dependent variables obtained from the CMS Care Compare website secondary datasets.

I did not discover a significant relationship between CAUTI rates and hospital overall star ratings. This led to the acceptance of the null hypothesis and the rejection of the alternative hypothesis. The reimbursement rates for acute care hospitals for patients with CAUTIs revealed a positive correlation that when the CAUTI rates increase, the reimbursement rates decrease. The null hypothesis was rejected, and the alternative was accepted because there is a relationship between CAUTIs and reimbursement rates. Section 4 contains a summary of the findings, limitations of the study, recommendations for further research, implications for social change, and the conclusion.

Implications for Professional Practice and Social Change

CAUTIs represent a substantial burden within the healthcare industry. To resolve this fundamental issue, this segment contains a double methodology with suggestions for future CAUTI research and guidance for hospital administrators. By connecting research

experiences with noteworthy techniques, one expects to battle CAUTIs and work on achieving better results across healthcare settings.

Interpretation of the Findings in Context of the Theoretical Framework

The gap in the literature and the problem statement are in line with the need to examine the relationship between the prevalence of CAUTIs, hospital overall star ratings, and reimbursement rates by CMS. There were many studies on the prevention of CAUTIs, hospital overall star ratings, and reimbursement rates. However, no research showed a comparison of the relationship between the prevalence of CAUTIs with hospital overall star ratings and the difference in reimbursement rates for acute care hospitals. The positive connection between the increase in CAUTIs and the decrease in reimbursement rates is critical to improving quality outcomes and reducing the financial implications for hospitals reimbursed by CMS.

I used Donabedian's (1966) theoretical framework in this study because of its extensive use and success in quality improvement measures in healthcare organizations (Maurer et al., 2021). According to Donabedian (1966), healthcare administrators can use Donabedian's theoretical framework to guide the strategies that the leaders can implement to achieve positive quality outcomes and decrease financial penalties for their organizations. The application of this framework in CAUTI prevention can guide leaders through the progression of structure, process, and outcomes (McCullough et al., 2023). The structure in this study represents the reimbursement models, staffing, policies, and leadership support. The process or throughput embodies the clinical practice guidelines, insurance approval, and LOS, and the outcome signifies the changes in reimbursement

rates, hospital overall star ratings, incidences of CAUTIs, and inpatient morbidity and mortality rates.

Comparison with Previous Research and Existing Literature

The findings align with previous research that addressed the relationship between hospital quality and patients' outcomes. Studies have reliably shown that healthcare facilities with better quality scores will have fewer medical errors and better outcomes (Zamboni et al., 2020). The findings from this study will contribute to the existing literature by explicitly underscoring the connection between CAUTIs, hospitals' overall star ratings, and reimbursement rates. The findings suggest that CAUTIs and reimbursement rates are statistically significant. As the number of CAUTIs increases, there is a decrease in reimbursement rates. A report by Hegwer (2019) indicated that one incident of CAUTI can cost the healthcare organization up to $14,000 more per occurrence.

Although the incidences of CAUTIs do not significantly impact hospital overall star ratings, healthcare organizations must develop strategies aimed at providing quality and positive health outcomes for patients. A report by the American Hospital Association (2022) showed that there are inconsistencies in the hospital star ratings. The report indicated that smaller hospitals that report fewer quality measures might see a different result when compared to larger hospitals that report more quality measures.

The literature on how hospital size impacts infection rates is mixed. Some studies have shown that larger hospitals have superior infection control measures, whereas others have suggested no significant difference (Zamboni et al., 2020). This research contributes

to this body of knowledge by showing a potential association between the increase in CAUTI rates and the decrease in reimbursement rates in acute care hospitals.

Limitations of the Study

Despite the valuable insights gained from this research, acknowledging its limitations is essential. One significant limitation is the reliance on secondary data from the CMS Care Compare website. The information may impede accuracy and fulfillment and can affect the review's validity. This study showed that there is a correlation between CAUTI and reimbursement rates and that there is no correlation between CAUTI and the hospital's overall star rating. The results can be a source of meaningful information to healthcare policymakers, administrators, and professionals to continue to work toward the mitigation of CAUTIs. While the study has limitations, it contributes to the current literature and highlights the significance of healthcare administrators' responsibilities in reducing CAUTIs.

Recommendations for Further Research

The implications of these findings for healthcare policy and practice are significant. Policymakers should consider CAUTI rates and the impact on hospital reimbursement. Hospitals with high CAUTI rates might need extra help and assets to upgrade their disease control measures. The smaller hospitals ought to zero in on further developing their preventative avoidance programs. Although asset limitations might exist, interests in preparation, normalized practices, and the acceptance of best practices can assist with relieving CAUTI risks. Collaboration with bigger medical care frameworks or local well-being specialists may likewise furnish smaller hospitals with

access to essential assets and resources. The impact of the reduction in reimbursement can lead to a loss in revenue. The loss of thousands of dollars can bankrupt an organization. Therefore, hospital leaders need to focus on CAUTI prevention and reimbursement strategies to prevent loss of revenue because of the reduction in payment from insurance payers.

Identifying the Underlying Causes

To effectively combat CAUTIs, it is imperative to conduct a thorough investigation into the underlying factors driving their occurrences. This should include a thorough assessment of patient-explicit qualities, incorporating age, comorbidities, and urinary conditions that might make the patients more vulnerable to acquiring CAUTIs. Investigation of the underlying causes can give providers and researchers a chance to follow CAUTI rates methodically. These can assist with recognizing issues and difficulties in CAUTI anticipation efforts. Investigating medical services framework-related issues, such as staffing levels, adherence to aseptic techniques, and resources for CAUTI prevention can assist healthcare providers and administrators in recognizing some of the challenges it brings.

Short-Term Studies to Assess Intervention Effectiveness

Short-term studies designed to address the effectiveness of CAUTI prevention interventions play a pivotal role in enhancing patient safety within healthcare organizations. These studies, which commonly range over a brief period, are centered around evaluating the effect of selected interventions, such as staff training programs and catheter placement competencies. These interventions can produce data proof concerning

the results of early intervention. The results of studies after a new intervention inform healthcare providers regarding the success of a new intervention or the need to revise procedures and policies to reduce CAUTIs.

Incorporating the Patient Perspective

Incorporating the patient perspective into CAUTI research is crucial for developing effective prevention strategies. Patients' experiences and preferences offer valuable insights that can significantly enhance the relevance and success of CAUTI prevention plans. Patient-centered care is a shared-decision collaborative approach between patients, family members, and providers (NEJM Catalyst, 2017b). By effectively teaching patients and getting their thoughts about catheter use, the discomfort it might include, and their interests in disease risk, healthcare workers can alter interventions to support patient necessities and inclinations. This patient-centered-focused approach helps engage healthcare workers who care for patients with foley catheters, to involve the patient's participation in their care, whenever it is possible.

Economic Impact Assessment

Investigating the economic impact of CAUTIs is paramount for healthcare administrators and policymakers. Such exploration ought to entail an exhaustive examination of the total financial results related to CAUTIs, including the immediate treatment costs and the significant loss of revenue. Understanding the total monetary implications of CAUTIs involves considering costs connected with hospitalization, extra hospital costs, medications, and extended LOS. According to Hollenbeak and Schilling (2018), the cost of additional diagnostic testing and medications for a patient who

develops CAUTI is $876, whereas the inpatient cost to Medicare for patients not occupying an intensive care unit bed is $1,764 per patient. The decrease in the reimbursement rates by CMS has the potential to bring undue hardship to healthcare organizations with high CAUTI rates, which can lead to bankruptcy.

Practical Guidance for Healthcare Institutions

Healthcare institutions can take several strategic steps to combat CAUTIs and improve patient outcomes. Cultivating a culture of HAIs prevention and counteraction is fundamental to engaging medical care staff to apply best practices. For example, state-of-the-art advances, such as the use of electronic health records (EHRs) for constant checking of indwelling catheter use, can assist with recognizing early establishment. Advancing interdisciplinary joint efforts among hospital staff who directly care for patients guarantees a comprehensive way to deal with CAUTI prevention (Ling et al., 2023). Hospital administrators need to implement a process in the collection of data to track the occurrences of patients who develop CAUTIs secondary to foley catheter placement, and for those who develop urinary tract infections and do not have a foley placement. When incorporated into the hospital policies and procedures, these actions can improve patients' safety and outcomes.

Implementing Robust Surveillance Systems

To enhance CAUTI prevention efforts, administrators of healthcare organizations should establish effective surveillance systems to monitor CAUTI rates continuously. Standard observation recognizes patterns and fills in as an early advance notice

framework for flare-ups (Ling et al., 2023). Clinicians can change their catheter-related practices by using evidence-based practices to decrease CAUTI risk.

These recommendations necessitate a multidisciplinary approach involving clinicians, infection control specialists, and administrators. By integrating evidence-based work, keeping up with staff training, and implementing catheter removal protocols, hospitals can establish a more secure climate for patients while lessening the number of CAUTIs. These systems work on continuing consideration and add to the organization's overall quality and safekeeping efforts.

Implications for Positive Social Change

Although there was no statistically significant relationship between hospitals' overall star ratings and CAUTIs, there was a statistically significant relationship between reimbursement rates and CAUTIs. The findings showed that as the infection rates increase, reimbursement rates decrease. The results have implications for influencing organizational policies in prevention strategies.

The decrease in hospital reimbursements can lead to financial hardship for the impacted healthcare organizations. Studies have shown that the treatment of CAUTIs is expensive, and it adds $390 million to $450 million to U.S. hospital costs annually (Vokes et al., 2018). The findings suggest that healthcare administrators must continue to support health promotion strategies for the mitigation of CAUTIs. When CAUTI is lessened, it will reduce the reimbursement penalties imposed by CMS on hospitals that are poor performers in quality outcomes.

Healthcare administrators and policymakers should focus on the delivery of quality healthcare, engage staff and other stakeholders, and create policies that focus on the prevention of CAUTIs. Another positive social change that can be achieved by the implementation of preventative strategies is the decrease in mortality and morbidity rates and the increased LOS associated with CAUTIs. An increase in LOS impacts the patients and the organizations. There can be a loss of revenue for patients who are not able to return to work because of prolonged hospitalization. The patient is the central being whom providers must consider when delivering healthcare. Healthcare administrators must put the care of the patients first and develop a culture of safety within their organizations. The reduction in CAUTIs and other HAIs can decrease the poor outcomes for many hospitalized patients, which can in turn decrease the negative impact of hospital reimbursement rates.

Conclusion

I focused on the intricate relationship between CAUTIs, hospital overall star ratings, and reimbursement rates. After reviewing the literature and analyzing data from the CMS Care Compare website, I discovered some significant findings. These findings indicated a link between the prevalence of CAUTIs and reimbursement rates. This study is valuable because it sheds light on the factors that can impact CAUTIs and addresses the importance of overall star ratings and fiscal impact as measures of healthcare performance. It highlights the need for customized infection control strategies in hospital settings. This study can serve as a foundation for further research and practical

interventions to reduce CAUTIs and other HAIs and improve overall healthcare delivery across hospitals of varied sizes.

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