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Association Between Staff Patient Safety Grade Mean Rating Score, the Person and Community Engagement Domain Score, and the Hospital Value Based Purchasing Total Performance Score

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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By

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MS-HSA, MBA, University of St. Francis, 2005, 2007

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Doctoral Study Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

It is essential for hospitals to focus on improving indicators that positively influence patient experience and clinical outcomes and thereby improve clinical and financial organizational outcomes. The purpose of the study was to examine the association between the staff Patient Safety Grade Mean Rating Score, Person and Community Engagement Domain Score, and the Value Based Purchasing Total Performance Score. The theoretical framework used in this study is the Donabedian model specifically regarding providing structure, process, and outcomes framework relative to the evaluation of care. The research questions examined the association between staff Patient Safety Grade Mean Rating Score, the Person and Community Engagement Domain Score, and the Value Based Purchasing Total Performance Score. The study design was a cross sectional approach. The study used data from the Agency for Healthcare Research and Quality (AHRQ) Survey on Patient Safety, as well as the Center for Medicare and Medicaid Services, Hospital Value Based Purchasing Program. Two key findings in this study including the identification of a statistically significant relationship between the Person and Community Engagement Domain Score and the Hospital Value Based Purchasing Total Performance Score, and secondly, that there was no statistically significant relationship between the Person and Community Engagement Domain Score and the Hospital Value Based Purchasing Total Performance Score were noted. The findings suggest that hospitals that have better patient experiences are more likely to have better clinical outcomes. Findings may be used by hospital administrators for positive social change to improve patient experiences.

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Dedication

I would like to dedicate this research study to my twin sons, Colton and Cody Cole, my late uncle, Larry Sands, MD, and my late mother, his sister, Scarlette G. Richie. All of you suffered the consequences of poor-quality healthcare patient safety errors that contributed to your disability or untimely death. I have made it my mission and passion to spend every minute remaining in my nursing and healthcare leadership career making health care and healthcare processes safer for our patients. Safe patient care and high-quality patient outcomes rely on this relentless focus on building a patient safety and leadership culture that supports the intricacies and needs of the individual patient.

Acknowledgements

I wish to bestow my deepest sense of gratitude and thanks to the chair of my committee, Dr. Lee Bewley. I have appreciated your encouragement, support, and guidance throughout this research process. You have helped me rethink and reorganize my approach and research focus multiple times to a place that just felt right to me and made sense.

To my husband Matt and our 5 children, I have appreciated your love, support, and patience for the many hours you have shared me and sacrificed time with me to allow me to focus on my education and the betterment of myself, my career, and my contribution to better outcomes in the health care world that has been my livelihood for 36 years.

To those that have been on this health care journey with me over 36 years, I am forever in awe and indebted to your tolerance of my relentless focus around promoting better patient outcomes, higher satisfaction, and an environment that is fun to work in.

Table of Contents

List of Figures

Section 1: Foundation of the Study and Literature Review

Introduction

The purpose of this quantitative study was to explore the association between staff Patient Safety Grade Mean Rating Score, Person and Community Engagement Domain Score, and the Hospital Value-Based Purchasing Program Total Performance Score outcomes of care composite. “Examining if positive Patient Safety Grade Mean Rating Scores and increased Person and Community Engagement Score can positively impact clinical outcomes for patients is essential to understand both for placing organizational and strategic focus as well as for resource allocation purposes,”(Haley et al.,2017). The need for this information derives from the opportunity to create a positive influence on the clinical outcomes of patients while also improving financial performance. This study demonstrates the potential to influence positive social change while decreasing the cost of health care expense by improving the quality of patient care delivered (Piper, 2008).

Chapter 1 includes the problem statement, purpose of the study, research questions and theoretical foundation of the study. The chapter also includes nature of the study, literature search strategy, literature review related to key concepts, definitions of key variables, assumptions, scope and delimitations, and significance, summary and conclusions.

Problem Statement

A problem exists related to the lack of understanding about mechanisms used to effectively maximize and promote improved health care outcomes and quality and lower health care expenses (Haley et al., 2017). The excessive cost of health care in the United

States is unsustainable and at a crisis level (Lyford & Lash, 2019). The United States health care system has failed to deliver improved patient care outcomes (Haley et al.,2017). The VBPP seeks to improve patient safety and experience by basing Medicare payments on the quality of care provided rather than on the number of services performed (Haley et al., 2017).

Further research is needed to determine causality and to clarify the nature of the staff engagement/patient safety relationship at individual and unit/workgroup levels (Janes et al., 2021). It is essential for hospitals to focus on improving indicators that positively influence patient experience, the patient safety culture, and clinical outcomes, and thereby improve the Center for Medicare and Medicaid Services (CMS) Hospital Value Based Purchasing Total Performance Scores, by lowering health care expense and secondarily improving hospital reimbursement (Haley et al., 2017).

Purpose of the Study

The purpose of this quantitative study was to explore the association between staff Patient Safety Grade Mean Rating Score, the Person and Consumer Engagement Domain Score, and the Hospital Value Based Purchasing Total Performance Score outcomes of care composite. Examining if higher classified staff patient safety rating levels and elevated Patient and Community Engagement Domain Scores can positively impact clinical outcomes for patients is essential to understand both for placing organizational and strategic focus as well as for resource allocation purposes (Haley et al., 2017).

The implications to the future of maintaining a high functioning and producing workforce to achieve desired organizational outcomes are of extremely high importance

(Hamilton et al., 2016). Delivering optimal clinical and patient care outcomes is paramount in the current high-demand pay-for-performance healthcare environment (Drachenberg, 2016). A highly supported, healthy, and engaged workforce is essential to achieve the organizational and financial outcomes necessary for hospitals to remain in existence (Drachenberg, 2016). The dependent variable for this study was the staff Patient Safety Grade Mean Rating Score, and Patient and Community Engagement Domain Score. The independent variables included Hospital Value Based Purchasing Total Performance domain composite scores.

I used the data I collected to analyze the Patient and Community Engagement Domain score and its relationship and linkage with hospital care outcomes.

Research Questions and Hypotheses

The Hospital Value Based Purchasing Total Performance Score represents the sum of weighted domain scores, including the clinical outcome, person and community engagement, safety, and efficiency, and cost reduction domains (Centers for Medicare and Medicaid Services, 2020). The Hospital Value Based Purchasing Total Performance score is designed to measure individual hospital performance against others (Centers for Medicare and Medicaid Services, 2020). Understanding the relationship between how staff experiences the culture of safety in hospitals relative to their daily experience with the patient safety culture in an organization is an essential prerequisite to the development of a better understanding of what organizational initiatives might impact these elements (Haley et al., 2017).

The four domains encompass 12 clinical process measures and nine related to patient experience of care components (Centers for Medicare and Medicaid Services, 2020). The clinical process measures include the following:

1. 30-day Risk-Standardized Mortality Measures for acute myocardial infarction (AMI), congestive heart failure (CHF), pneumonia, chronic obstructive pulmonary disease (COPD), coronary artery bypass graft (CABG), and stroke (Centers for Medicare and Medicaid Services, 2020).
2. 30-day Risk Standardized Readmission Measure for AMI, CHF, pneumonia, hip/knee, COPD, CABG, stroke, and hospital-wide readmissions (Centers for Medicare and Medicaid Services, 2020).
3. 90-day Risk-Standardized Complications Measure for Hip/Knee Replacement (Centers for Medicare and Medicaid Services, 2020).
4. 30-Day Excess Days in Acute Care Measures for AMI, CHF, and Pneumonia (Centers for Medicare and Medicaid Services, 2020).
5. AHRQ Patient Safety Indicators including Death among Surgical Inpatients with Serious Treatable Complications and PSI 90 Patient Safety Composite Representing Preventable Complications (Centers for Medicare and Medicaid Services, 2020).

The AHRQ Hospital Survey on Patient Safety (SOPS) Culture program began in 2001 to advance a scientific understanding of health care patient safety cultures (Agency on Healthcare Research and Quality, 2018). The survey questions focus on health care providers' views on the organizational culture's support of patient safety (Agency on

Healthcare Research and Quality, 2018). The overall survey contains a set of 14 questions regarding perceptions about the culture of safety as it relates to the unit or department a person works in. In addition, there are three questions about perceptions of leadership, seven questions about communication, and three questions about reporting of patient safety events. There are six questions about the hospital as a whole (Agency on Healthcare Research and Quality, 2018). There is one patient safety rating score that healthcare staff use to provide an overall rating of their unit/work area as it relates to the support of the culture of patient safety (Agency on Healthcare Research and Quality, 2018). I chose this single measurement for this study because it represents an overall perception or composite of one's thoughts about patient safety (Agency on Healthcare Research and Quality, 2018).

Research Questions and Hypotheses

Research Question 1 (RQ1): How do staff Patient Safety Grade Mean Rating Scores Impact Hospital Value Based Purchasing Total Performance Scores?

Null Hypothesis ($H_0$1): There is no statistically significant impact between staff Patient Safety Grade Mean Rating Scores and Hospital Value Based Purchasing Total Performance Scores.

Alternative Hypothesis (H_a1): There is a statistically significant impact between staff Patient Safety Grade Mean Rating Scores and Hospital Value Based Purchasing Total Performance Scores.

Research Question 2 (RQ2): In the reporting year of 2021, how do Person and Community Engagement Domain Scores Impact Hospital Value-Based Purchasing Total Performance Scores?

Null Hypothesis ($H_0$2): There is no statistically significant impact between Person and Community Engagement Domain Scores and Hospital Value Based Purchasing Total Performance Scores.

Alternative Hypothesis (H_a2): There is a statistically significant relationship between Person and Community Engagement Domain Scores and Hospital Value Based Purchasing Total Performance Scores.

The key dependent variable was the Hospital Value Based Purchasing Total Performance Score (composite) and its relationship with the independent variables of staff-patient safety rating and the Patient and Community Engagement Domain composite scores. The Patient and Community Engagement Domain composite score represents an overall dimension score comprised of select HCAHPS measurements representing patient and caregiver-centered experience of care and care coordination domains (Centers for Medicare and Medicaid Services, 2020). This HCAHPS domain includes communication with nurses and doctors, the responsiveness of hospital staff, communication about medicines, cleanliness, and quietness of the hospital environment, discharge information, overall rating of the hospital, and care transitions (Centers for Medicare and Medicaid Services, 2020). Therefore, it is essential to understand the relationship between Patient and Community Engagement Domain Score and the Hospital Value Based Purchasing Total Performance Score to promote appropriate

hospital organizational focus and resource allocation to improve both Patient and Community Engagement Domain Score and the culture of patient safety to improve and sustain improvement with clinical outcomes (Haley et al., 2017).

Theoretical Foundation

I used for the Donabedian model for this study. The Donabedian model supports a framework of the structure, process, and outcomes to describe influences on evaluating the quality of care (Berwick & Fox, 2016). Structural components in this analysis include the Patient and Community Engagement Domain Score and Hospital Value Based Purchasing Total Performance Score clinical process of care measures as well as employee patient safety rating scores. In this quantitative study, structural elements for control and comparison included a variety of hospital and market characteristics including organizational size, teaching status, geographic location, ownership, and system status, which I used to describe the context in which care is delivered. The Hospital Value Based Purchasing Total Performance Score is a sum of the clinical outcomes, person and community engagement, safety, and efficiency cost reduction weighted domain scores (Centers for Medicare and Medicaid Services, 2020).

The Person and Community Engagement Domain Score, or patient satisfaction is relevant because it is a key factor in promoting higher reimbursement based on its 25% weight in the Hospital Value Based Purchasing Total Performance Score (Haley et al., 2017). The effectiveness of care can be measured through the patients' experience of interaction with the health services provided through the Hospital Consumer Assessment of healthcare Providers and Systems (HCAHP) survey which was implemented in 2006

leadership strategies and resource allocation (Haley et al., 2017). This survey was created by a joint effort between CMS and the AHRQ to gain insight into the patients' perceptions of the effectiveness of care (Haley et al., 2017). The use of patient experience as a measure of quality is a topic of controversy in the literature; however, the association between patient experience and clinical outcomes is well established (Haley et al., 2017).

Multiple clinical outcome measurements encompass the various domains included in the Hospital Value Based Purchasing scoring system including mortality and complication rates for various conditions, hospital acquired conditions and infections including the AHRQ quality patient safety indicator composite which encompasses 90 various measures (Centers for Medicare and Medicaid Services, 2020).

The Institute of Medicine examined and classified patient safety as a property of the health care system versus a property of the individual (Adams-Pizarro et al., 2013). Several models for cultural change have evolved and been applied to various settings including the provision of health care (Adams-Pizarro et al., 2013). James Reason outlines the differentiation between a systems approach versus a person's approach relative to the application of high reliability organization attributes (Adams-Pizarro et al., 2013). He notes that high reliability organizations display approaches that focus on improving the system in response to an event and viewing these events as opportunities for systematic improvement (Adams-Pizarro et al., 2013).

Nature of the Study

The logical connections between the framework presented and the nature of this study include gaining a better understanding of the relationship between employee

Patient Safety Grade Mean Rating Scores, Patient and Community Engagement Domain Scores, and Hospital Value Based Purchasing Total Performance Score outcomes is of paramount importance relative to the impacts on hospitals with resource allocation around patient safety and engagement improvement initiatives, financial performance, and sustainability (Haley, Hamadi, Zhao, Xu, & Wang, 2017).Although there are a multitude of research studies that focus on the relationship between the patient experience and clinical outcomes of care, this study will add to the body of research supporting the relationship between employee perceptions of the culture of safety represented by the AHRQ Patient Safety Grade Mean Rating Score, together with the Patient and Community Engagement Domain Score, and Hospital Value Based Purchasing Total Performance Score outcome composites where there is little to no current or past research activity.

The findings from this study may be used to promote resource allocation and strategic focus around improving employee patient safety ratings and perspectives about the organizations safety culture and patient experience as a strategy to improve clinical outcomes and therefore reduce the cost of United States health care promoting a sustainable model of health care for the future.

Literature Search Strategy

The search engines that I used for this study included: Walden University Health Sciences databases including CINAHL and Medline, ProQuest Health and Medical Collection, ProQuest Nursing and Allied Health Database and all related health science databases.

The years that I included in the search were primarily years 2015 through 2021. Exceptions included older literature searches regarding theoretical foundation models that included articles related to the original theorist's foundational works.

I conducted and extensive and systematic literature search for peer reviewed articles on the topics of hospital staff perceptions about patient safety, Hospital Value Based Purchasing outcomes and the Total Value Based Purchasing Total Performance Score composite, patient experience, Person and Community Engagement Domain, Patient Satisfaction, Readmissions, Compassion Fatigue, Donabedian Model, Cross Sectional Research Approach, Burnout, Mortality, and Clinical Outcomes, Quality, Nurse Engagement, Physician Engagement, Patient Safety, Patient Safety Ratings between 2015 and 2021.

Literature Review Relative to Key Concepts and Variables

In this literature review, I focused on concepts incorporated into the Accountable Care Act (ACA) supporting the inpatient prospective payment model of Hospital Value Based Purchasing, as well as evaluation of this model's effectiveness over time. I also examined the relationship between both patient experience and the perceptions about patient safety and its association with improved clinical outcomes

Problem Identification and Need for Additional Research

Haley et al., (2017), examined the relationships between the Hospital Value Based Purchasing Total Performance Score and Patient and Community Engagement Domain Score as well as outcome domains (Haley et al., 2017). The researchers stated that those hospitals who have higher patient satisfaction as evidenced by higher Patient and

Community Engagement Domain scores, associated with the HCAHPS survey, also exhibited higher clinical outcome scores (Haley et al., 2017). The study examined outcome data related to Hospital Value Based Purchasing Total Performance Scores and Patient and Community Engagement Domain scores for 1866 U.S. hospitals scores (Haley et al., 2017). The authors concluded that further research is needed to gain deeper insight into the relationship between patient satisfaction and the clinical outcomes of patients relative to how other characteristics about the hospitals organization and environment might also be a consideration scores (Haley et al., 2017). Topics for consideration include a better understanding of what it is about hospital size, cultural elements, and resource allocation might be positively or negatively influencing key variables scores (Haley et al., 2017). The authors acknowledge that while the Patient and Community Engagement Domain Score and Hospital Value Based Purchasing Total Performance Score showed a positive relationship, they did not necessarily reflect causation and individual domain relationships with process of care and structure measurements scores (Haley et al., 2017). Relative to this lack of detail related to causation, the authors called for additional research on all the topic structural elements and domains scores (Haley et al., 2017).

Janes et al., (2021), examined the association between patient safety outcomes and health care staff engagement and found a statistically significant relationship between patient safety outcomes and staff engagement (Janes et al., 2021). More specifically, the research team examined the relationship with patient safety outcomes, patient safety culture and adverse patient care events with the goal of understanding better how efforts

to increase staff engagement could potentially improve quality of patient care outcomes and the culture of patient safety (Janes et al., 2021). Eleven studies were deemed appropriate for a systematic review and meta-analysis to examine links between patient safety, clinical outcomes, and staff engagement (Janes et al., 2021).

Engaging staff by enabling them to speak up about safety concerns was theorized to support that this culture of safety characteristic may also encourage staff engagement to raise concerns and thereby actively contribute to process and quality improvement efforts that will positively impact clinical outcomes (Janes et al., 2021). The authors conclude that while the positive association they found between staff engagement and patient safety and clinical outcomes is valuable, that additional research is needed to clarify the nature and confirm the magnitude of the relationships between these variables and other related variables and organizational drivers (Janes et al., 2021). In addition, the authors concluded that more robust examination of different elements of patient safety and clinical outcome data may result in a deeper understanding of what interventions may be actionable to improve staff engagement, patient safety, and clinical outcomes may be useful for organizations to focus on (Janes et al., 2021). Additional insight into variable causation and organizational interventions to address clinical risks may also prove helpful in building this body of research to improve overall organizational outcomes (Janes et al., 2021).

Affordable Care Act and the Value Based Purchasing Payment Model

The Hospital Value Based Purchasing Program was created by CMS as part of the 2010 ACA (Pan, 2017). The goal of the ACA and the Value Based Purchasing Program

is to reduce and reissue payments to participating hospitals providing financial incentive to improve patient care, financial, and organizational outcomes (Pan, 2017). The Hospital Value Based Purchasing Program incentive program is based on evaluation of improvements in patient experiences as well as objective quality metrics with the overall goal of reducing healthcare expenses for over 3,000 hospitals nationally (Pan, 2017). Healthcare expenditure costs have been rising at a disproportionate rate without improvements in health care quality (Pan, 2017). The ACA targets populations to increase and improve health care access and control, but the VBPP targets quality as the primary goal.

Under the Hospital Value Based Purchasing Program, CMS seeks to transform from a passive payer into an active purchaser of healthcare services for those it serves (Pan, 2017). CMS evaluates hospitals in the Hospital Value Based Purchasing Program by analyzing improvements from year to year in each hospital's own performance but also through achievement in benchmarking against other hospitals (Pan, 2017).

Patient experience metrics are increasingly a large focus in value-based incentives programs by private insurance payers as well as the federal government programs supporting a clear financial imperative to improve patient experience (Wynn, 2016). Value can be defined as health outcomes achieved per a dollar spent with the outcomes being a measure of the quality indicators (Wynn, 2016). Patient experience as a quality indicator is valid to consumers who are looking for speed, affordability, and convenience of health care services as patients take on a larger burden to pay for high deductible plans and rising copayments on insurance plans (Wynn, 2016). Public reporting of quality,

clinical, and safety indicators promote informed patient decision making about where they will choose to go to receive the highest quality of care (Wynn, 2016). Promoting exceptional experiences leads to equipping patients with confidence, skills, and knowledge to choose and engage with health care providers to promote better patient outcomes and lower cost of care (Wynn, 2016).

Value Based Purchasing Program

The Hospital Value Based Purchasing Program is perceived as a technocratic solution to a political problem based in medical science and economic theory (Tanenbaum, 2016)**.** Donald Berwick noted that health care measurements have gotten out of control by the Hospital Value Based Purchasing Program demanding metrics in the form they would like them in, within the timeframe they would like them, and from whom they may want them from (Tanenbaum, 2016). Donald observes that the measurements and the maintenance to maintain the system comes at an excessive cost in salaries and operational expenses to hospitals (Tanenbaum, 2016). It is believed by various professional medical societies that standardization of care and value calculations could compromise and raise the cost of care blanket approaches to medical decision making and treatment versus individualized plans of care (Tanenbaum, 2016).

The Hospital Value Based Purchasing Program is perceived to be of high value to policy makers to provide a morally justifiable alternative to reimbursement and regulatory policies (Tanenbaum, 2016). A debate exists to examine if patient and family values and desires for care are a consideration and/or if quality outcomes as directed by

the Hospital Value Based Purchasing Program are placed in higher esteem (Tanenbaum, 2016).

A new report from the Center for Healthcare Quality and Payment Reform promotes the idea that many flaws exist with the current Hospital Value Based Purchasing Program including assignment of accountability inappropriately to hospitals and physicians for metrics they cannot fully influence or control (Michigan Health Policy Forum, 2021). Additionally, physicians and hospitals can be penalized for using evidence-based approaches for complex patients if they cost more but are more effective treatment modalities (Michigan Health Policy Forum, 2021). Failure to provide healthcare providers with actionable data and information is also thought to be extremely problematic (Michigan Health Policy Forum, 2021). This report also promotes the thinking that the risk score structure may or may not recognize significant differences in patient care needs and therefore penalize creativity in treatment modalities (Michigan Health Policy Forum, 2021).

Seung Lee et al., (2020), examined the impact of Hospital Value Based Purchasing Program on improving operational outcomes and determined that hospitals who received penalties based on substandard performance exhibited evidence and motivation to improve processes in ways that increased hospital operational outcomes and financial performance (Lee et al., 2020). This is based on the premise that hospitals receiving financial penalties are likely to analyze risks and focus on development of new operating strategies to overcome the penalty (Lee et al., 2020). The Hospital Value Based Purchasing Program encourages a managerial shift in focus to various ways that

patients and materials flow through clinical processes and various programs focused on improving performance though use of value stream maps, electronic medical records, telemedicine, and care processes that have been redesigned for efficiency (Lee et al., 2020). These empirical findings have significant impact for healthcare policy makers as they support that the shift from volume to value will make hospitals more accountable resulting in lower costs as well as better patient experiences and clinical outcomes (Lee et al., 2020).

Nurse engagement, quality, safety, and experience of care. For nursing leadership to build and promote nursing engagement and retention, it is important to understand the interdependent relationships between quality, safety, the patient, and the registered nurse (RN) experience of care and levels of engagement (Dempsey & Assi, 2018). It is estimated that a disengaged nurse costs an organization more than $22,000 in lost revenue and productivity and negatively impacts patient and caregivers' levels of engagement and patient satisfaction (Dempsey & Assi, 2018). All HCAHPS domains are influenced by the people who care for patients every day and nursing communication is a top driver of these global ratings (Dempsey & Assi, 2018). Nursing turnover is also known to be a large threat to building teamwork and nurse and patient engagement (Dempsey & Assi, 2018).

A 2017 Nursing Report supporting qualitative and quantitative research methods highlighted patient and nurse outcomes within the context of the nursing practice environment (Dempsey & Assi, 2018). The report evaluated performance across various metrics including patient experience, patient safety, quality, nurse engagement, nurse

satisfaction, and retention (Dempsey & Assi, 2018). Results showed that higher performing nurse managers with stronger leadership skills had significant positive impact on nurse outcomes (Dempsey & Assi, 2018). In addition, it was noted that quality improvement initiatives that place equal emphasis on improvement of the patients experience also led to organizations achieving desired quality and patient safety outcomes (Dempsey & Assi, 2018).

In a secondary analysis of linked cross sectional survey data of 26,960 nurses across hospitals in four states, 32% of nurses gave their hospital a poor or failing patient safety grade (Carthon, et al., 2019). Twenty-five percent of nurses fell into the low engagement categories (Carthon et al., 2019). The study concluded that a one unit increase in engagement lowered the odds of the nurse giving an unfavorable safety grade by 29% (Carthon et al., 2019). Conversely the survey revealed that hospitals reporting higher levels of engagement with 19% more likely to report that mistakes were held against them as well as reporting that important information about patients was not passed on when patients transferred from nursing unit to unit (Carthon et al., 2019). Findings from this study showed an association between nurse engagement, nurse staffing and patient safety improvements (Carthon et al., 2019). In addition, the authors acknowledge their prior research supports the non-disputable relationship between nurse engagement, patient safety, and clinical care outcomes (Carthon et al., 2019).

The Institute of Medicine (IOM) recommended consideration for transforming nurse work environments as a strategy to keep patients safe, thinking creatively from

traditional approaches on traditional patient safety specific interventions (Carthon et al., 2019).

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Patient safety outcomes relative to healthcare staff engagement. Eleven studies in a meta-analysis were examined on the topics of safety culture, patient safety outcomes, staff engagement and patterns of errors and adverse patient safety events (Janes et al., 2021). Reports based on hospital-based data suggest that health care safety performance and staff engagement are strongly associated (Janes et al., 2021). The studies support that engaged staff deliver better work performance and therefore better patient care outcomes including lower patient mortality, improved reporting of errors and near misses and other notable outcomes (Janes et al., 2021).

Most of the studies investigated engagement as a practice versus a state (Janes et al., 2021). This review concluded that only 2 of the 6 engagement categories identified had been studied in relation to patient safety supporting the need for additional research to tie in the association between patient safety and clinical care outcomes (Janes et al., 2021). The relationship between strategies to build staff engagement stem from the association with also engaging them to report concerns and contribute to service and process improvement that were found to positively influence quality of care (Janes et al., 2021).

Promotion of strategies to improve staff engagement to positively influence patient safety and patient care outcomes were concluded to be an impactful and cost-effective means to improve patient safety outcomes (Janes et al., 2021).

Patient experience impact on clinical outcomes. Singer et al., (2019), sought to determine how length of stay and postoperative complications after thoracic surgery impact HCAHPS scores (Singer et al., 2019). Over a four-year period, 181 patients undergoing lung resection in a single academic center were analyzed relative to their completion of HCAHPS surveys and subsequent scores (Singer et al., 2019). Major and overall complication rates were found to be 3% and 43% respectively with top box ratings for overall experience (92%), physician communication (84%), and nurse communication (69%), (Singer et al., 2019).

Longer lengths of stay were associated with lower physician and nurse communication ratings (Singer et al., 2019). In addition, patients who experienced increased lengths of stay greater than 6 days were less likely to report that physicians explained things in a way that they understood the explanations and that nurses listened carefully (Singer et al., 2019). Conclusions drawn were that the perceptions of effective communication and therefore increased patient satisfaction, was negatively associated with increasing lengths of stay (Singer et al., 2019).

Thirty patients with knees with osteoarthritis and inflammatory arthritis and preoperative stiffness who underwent a Cruciate Retaining Total Knee Arthroplasty were followed for up to a 2-year period (Purudappa, et al., 2020). This patient population with decreased preoperative range of movement was known to be associated with increased

complications and revision rates (Purudappa, et al., 2020). Data was reported as the mean or median and frequencies were expressed as percentages (Purudappa, et al., 2020). Quantitative data was evaluated using Paired t-test and comparison between groups were made by the non-parametric Mann Whitney test. Pearson coefficient of correlations was used to evaluate variable relationships (Purudappa, et al., 2020).

The patients' clinical and functional outcomes were assessed according to the WOMAC, Knee Society Score, and a 5-point Likert scale for patient satisfaction postoperatively (Purudappa, et al., 2020). At the time of the follow up, patients with statistically significant improvement in arc of motion and flexion measurements and no major complications also exhibited excellent patient satisfaction in 90% of the patients (Purudappa, et al., 2020).

Patient safety grades. In 2018 630 hospitals administered the Survey on Patient Safety culture (SOPS) (Agency on Healthcare Research and Quality, 2018).Twelve areas of patient safety culture was assess with 382,834 providers and staff responding to the survey questions (Agency on Healthcare Research and Quality, 2018). Areas of strength in the survey were teamwork within units, management support for patient safety and organizational learning (Agency on Healthcare Research and Quality, 2018). The largest areas of opportunity for the majority of the hospitals included non-punitive response to error, handoffs and transitions, and staffing (Agency on Healthcare Research and Quality, 2018). Smaller hospitals (6-24 beds) reported the highest percent positives and extremely large hospitals (500+ beds) reported the lowest percent positive scores (Agency on Healthcare Research and Quality, 2018). The top three respondent staff positions were

nurses at 37%, 11% other positions and 11% technicians, with other work areas (30%), medicine (13%), and surgery (10%) (Agency on Healthcare Research and Quality, 2018).

Patient safety culture as defined by AHRQ considers the extent to which values, beliefs, and norms factor into the promotion and support of patient safety in an organization (Agency on Healthcare Research and Quality, 2018). The average percentage of positive responses for overall perceptions of patient safety across composites was 66% with the highest average percent positive answers around "Our procedures and systems are good at preventing errors from happening" (Agency on Healthcare Research and Quality, 2018). The lowest average percent positive in the composite is "It is just by chance that more serious mistakes don't happen around here" at 62% (Agency on Healthcare Research and Quality, 2018).

The patient safety grade is represented by the letter grade that respondents give their work area or unit based on overall perceptions of patient safety (Agency on Healthcare Research and Quality, 2018). Seventy eight percent of respondents in the 2018 survey gave their unit a patient safety grade of A or excellent (35%) or B which is very good (43%), whereas 5% gave safety grade rating of poor (D) or failing (E) (Agency on Healthcare Research and Quality, 2018).

Patient safety and patient experience of care. Mazurenko et al., (2019), utilized ordinary least squares regression analysis with a cross sectional design to examine the relationship contrasting between managers and bedside staff and physicians' perceptions of patient safety climate relative to patient satisfaction scores (Mazurenko et al., 2019). The main independent variables evaluating managers and clinicians'

agreement with the patient safety domains of communication openness, communication about errors, teamwork across units, and teamwork within units (Mazurenko et al., 2019). HCAHPS scores including communication with nurses and doctors, communication about medicines, and discharge information were utilized as dependent variables (Mazurenko et al., 2019). The authors hypothesized that differences in clinician perceptions about the organizations culture of safety and safety climate may influence the patient experience in generality (Mazurenko et al., 2019). The larger premise was based on the belief that improving health care quality will reduce health care spending and if health care quality can be improved by positive influence of a healthy patient safety culture, that interventions to promote patient safety culture would be a wise investment (Mazurenko et al., 2019).

Findings concluded that in general, patient satisfaction was higher when both managers and clinicians reported that their perceptions of the patient safety culture and climate were high in their units (Mazurenko et al., 2019). In addition, in units were staff rated the patient safety climate higher than the managers, patient satisfaction scores were noted to be higher than the converse scenario Mazurenko et al., 2019). The findings overall supported the original hypothesis that the organizations patient safety climate is positively correlated with the patient experience of care (Mazurenko et al., 2019). It was also concluded that theoretically clinicians and front-line staff are better judges than managers for how the patient safety climate can positively influence patient experience (Mazurenko et al., 2019). Findings also supported their hypothesis that elevated levels of

engagement with front line staff is essential to improve both the patient safety and the patients experience of care and therefore patient outcomes (Mazurenko et al., 2019).

Patient experience of care and hospital value based purchasing program total performance score. Historically, health plans have shielded consumers of health care cost and value choices and health care consumers had little motivation to choose providers based on cost or quality (Haley et al., 2017). Consumers also historically were more likely to choose hospitals based on familiarity versus quality ratings so therefore there was not a large propensity toward demanding transparency of clinical outcome data or motivation to locate and choose a health care system based on outcomes (Haley et al., 2017). The hospital value based purchasing program generates a total performance score methodology to measure individual hospital performance (Haley et al., 2017). The Total Performance Score model was implemented in 2013 and included domains for clinical processes of care which comprised 70% of the total performance score and a patient experience of care domain utilizing the HCAHPS survey for the remaining 30% (Haley et al., 2017). Since then, the program has evolved to include a similar distribution, but the elements and weights have been altered year to year (Haley et al., 2017). What remains, however, is that the patient and community engagement domain Score accounts for 25% of the Total Performance Score and largely impacts hospital reimbursement as a direct result (Haley et al., 2017).

Haley et al., (2017), studied the relationship between patient experience of care and outcome domains utilizing the Donabedian conceptual framework with a cross sectional approach which is very similar to what is proposed in this research study (Haley

et al., 2017). Data from the 2015-2016 hospital value based purchasing program, the American Hospital Association (AHA)**,** and the Area Health Resource file was analyzed using univariate, bivariate, and multivariate analysis of 1866 hospitals across the U.S. (Haley et al., 2017). The analysis controlled for bed size, payer source, patient population, ownership, demographic setting, and teaching versus non-teaching hospital status (Haley et al., 2017).

The main objective of this research was to understand the connection between the Patient and Community Engagement Domain Score and outcome domains and to understand more clearly if Patient and Community Engagement Domain Score is an appropriate indicator of quality (Haley et al., 2017).

Research result revealed a significantly positive relationship between Patient and Community Domain Scores and Hospital Value Based Purchasing Program Total Performance scores indicating that hospitals that have better patient experiences also were significantly associated with better outcomes (Haley et al., 2017). These study findings are significant because they consider alternative indicators that may better promote and represent drivers of higher quality of care (Haley et al., 2017). These findings are significant for both policy makers and hospital administrators as they can focus strategically, and operationally, to allocate financial resources on initiatives that will more effectively improve patient clinical outcomes and therefore maximize performance in the Hospital Value Based Purchasing Program payment model (Haley et al., 2017).

Outcome Strategies. Hospital systems by virtue of having limited financial resources relative to shrinking reimbursement in a pay for performance model, must examine strategies that promote improved clinical outcomes in the most cost-effective manner. Improving patient satisfaction is a top priority (Bickmore & Merkely, 2019). Some research studies have indicated that patient experience has no relationship with quality of care, but many studies support that better patient experiences are more impactful to clinical outcomes than adherence to evidence based guidelines (Bickmore & Merkely, 2019). Bickmore and Merkley (2019), reference an article in the New England Journal of Medicine article, "The Patient Experience and Health Outcomes" (Bickmore & Merkely, 2019). This NEJM article promotes focus on various activities to promote better patient experiences including prioritizing care coordination and patient engagement, understanding better the impacts of new care delivery models, developing robust measurement approaches to provide actionable data, and improving data collection methods, and procedures to evaluate individual providers (Bickmore & Merkely, 2019). Bickmore and Merkley (2019), discuss five key recommendations that can enhance patient experience movements:

1. Use patient experience as a balanced measure versus a driver of outcomes meaning that for example an effort to reduce length of stay does not result in patients feeling rushed toward discharge (Bickmore & Merkely, 2019).
2. Evaluate care teams as a whole and not individual providers understanding that a multitude of interactions make up the patient experience (Bickmore & Merkely, 2019).

3. Utilization of health care analytics to understand and evaluate scores and report data in an actionable format (Bickmore & Merkely, 2019).
4. Leverage technology that innovates to enhance the patient experience (Bickmore & Merkely, 2019). Examples include communication devices that provide patient feedback in real time, interactive patient education systems, and utilization of smart rooms to allow customization of the environment (Bickmore & Merkely, 2019).
5. Improvement of Employee Engagement through an understanding of a body of research that supports that improving employee engagement improves patient experience, which in turn also improves clinical outcomes of care (Bickmore & Merkely, 2019).

Strategies to improve employee engagement include an appreciation for the challenges of a multigenerational workforce and seeking to enhance the key drivers of joy through effective leadership relationships as well as to build a culture of engagement (Dempsey & Assi, 2018). Dempsey and Assi (2018), discuss a recent analysis that support the finding that fifteen out of every one hundred nurses are disengaged or dissatisfied with their work environment (Dempsey & Assi, 2018).

Compassionate connected care framework is a tool that defines the patient experience as inclusive of behavioral, clinical, operational, and cultural aspects of care provided in every setting all of the time (Dempsey & Assi, 2018). The authors conclude that environments where staff feel supported and who are engaged will deliver patient care and organizational financial outcomes that hospitals desire (Bickmore & Merkely, 2019).

Parr et al., 2020, examine the effects of resonant leadership exchange relationship models on improving work engagement impacts on patient care outcomes (Parr et al., 2020).. Data utilized included analysis of staff engagement data from 252 nurses and clerical staff, patient safety as represented by patient fall rates, and patient satisfaction data (Parr et al., 2020).. Conclusions drawn from their study analysis support that a relational style of resonant leadership is positively associated with staff experience and patient care outcomes (Parr et al., 2020)..

This resonant leadership style focuses on people and relationships to work toward common goals (Parr et al., 2020).. Characteristics of resonant leadership include visionary aspects, coaching, affiliate, and democratic drivers that involve, partner, and engage with the staff (Parr et al., 2020).. Resonant leaders are identified as having strong transformational leadership traits including high emotional intelligence which promote the perceptions of organizational support (Parr et al., 2020.

Patient safety. Okuyama et al., (2018), examined health care professionals' perceptions of patient safety in hospitals in the U.S., and around the world (Okuyama et al., 2018). The researchers included a review of various research studies in a meta-analysis which supported that a higher culture of patient safety was known to be associated with better patient outcomes (Okuyama et al., 2018).. The outcome measures included the proportion of positive responses in various dimensions of the HSOPS including overall perceptions of patient safety (Okuyama et al., 2018

Non-punitive response to errors was found to be one of the lowest scores and teamwork among the units the highest scoring dimension (Okuyama et al., 2018 Studies

that evaluated the culture of safety amongst various professionals, demonstrated that physicians showed a less positive perception of safety than did nurses(Okuyama et al., 2018). . Factors or characteristics related to hospital settings found to have higher scores included a management commitment to safety culture, strong leadership partnership and support, effective communication, sufficient staffing, and multidisciplinary teamwork environments(Okuyama et al., 2018 Greater proportions of positive scores were found in the US hospitals versus anywhere in the world (Okuyama et al., 2018).

Definitions

Affordable Care Act- A comprehensive health care reform law that was enacted in March of 2010, with the goal of improving healthcare access, health, outcomes, and cost of healthcare services (Department of Health and Human Services, 2021).

Agency on Healthcare Research and Quality- One of twelve agencies within the United States Department of Health and Human Services, whose mission is to produce and promote evidence to improve the safety and quality of health care services (Agency on Healthcare Research and Quality, 2018).

Centers for Medicare and Medicaid Services- A federal agency within the United States Department of Health and Human Services that administers the Medicare program and works in partnership with state governments to administer Medicaid (Centers for Medicare and Medicaid Services, 2020).

Emotional Intelligence- (Ohio University, 2019): The ability to understand one's own emotions as well as recognize those of others (Ohio University, 2019). Emotional

Intelligence includes the qualities of self-awareness, self-regulation, empathy, motivation, and social skills (Ohio University, 2019).

Evidence Based Practice- A practice that has been rigorously tested through experimental evaluations and considered effective based on scientific evidence (Oregon Research Institute, 2021).

HCAHPS Survey- the Hospital Consumer Assessment of Healthcare Providers survey is the first nationally standardized publicly reported survey of patient's perspectives of hospital care (Centers for Medicare and Medicaid Services, 2021). The hospital survey is a survey instrument and data collection methodology for measuring patient perceptions about the experience of care while in the hospital (Centers for Medicare and Medicaid Services, 2021).

Hospital Value Based Purchasing Program- Medicare payment system designed to reward providers for the quality of care they provide. Under the Inpatient Prospective Payment System, the program adjusts payments to hospitals based on quality domains and weights for clinical outcomes, person, and community engagement, as well as efficiency and cost reduction measurements (Centers for Medicare and Medicaid Services, 2021).

Inpatient Prospective Payment Model- A system of payment for the operating costs of acute care hospitals inpatient stays under Medicare Part A based on prospectively set rates (Centers for Medicare and Medicaid Services, 2021).

Institute of Medicine-An independent nonprofit organization that works outside of government to provide unbiased and authoritative advice to decision makers and the

public (Institute of Medicine, 2009). It is the health arm of the National Academy of Sciences (Institute of Medicine, 2009).

Person and Community Engagement Domain Score- Domain score in the Hospital Value Based Purchasing Program that represents the hospitals patient experience data collected through the Hospital Consumer Assessment of Healthcare Providers and Systems survey process. It asks patients who have been discharged from the hospital various questions about their experience of care while an inpatient in the hospital (Centers for Medicare and Medicaid Services, 2021).

Resonant Leadership- Coined by Daniel Goleman, the term Resonant Leadership is used to describe a leadership style that promotes and incorporates principles of vision and leaders that can see the big picture, coaching to build trust, affiliative approach to promote team building and a democratic approach where staff are asked for input (Price, 2021).

Staff Patient Safety Rating- the Patient Safety Grade rating survey question in the AHRQ Hospital Survey on Patient Safety asks the survey participant to give their work area/unit in the hospital an overall grade on patient safety. Participants assign a score based on their perceptions of the safety culture on their unit of Excellent, Very Good, Acceptable, Poor, or Failing (Agency for Healthcare Research and Quality, 2021).

Value-Based Purchasing Total Performance Score- The hospital Value Based Purchasing Total Performance Score is a score assigned to each hospital participating in the Value Based Purchasing program. It is a composite of measurements including

clinical outcomes, safety, person and community engagement, and efficiency and cost reduction (Centers for Medicare and Medicaid Services, 2020).

WOMAC Knee Society Score- Western Ontario and McMaster universities Osteoarthritis Index is a widely utilized self-administered health status survey measure used to assess pain and stiffness with osteoarthritis (Shirley Ryan Ability Lab, 2016).

Assumptions

The first assumption of this study is that the survey instruments utilized to measure both patient and community engagement domain score and the patient safety grade mean rating score will elicit reliable responses based on both the HCAHPS and AHRQ culture of safety survey processes each derive from and that patient participants will answer the surveys honestly. The HCAHPS survey is a national, standardized, publicly reported survey utilized to measure patients' perceptions of their hospital experience. Focuses for the HCAHPS survey design include the ability to produce objective and meaningful comparisons of hospitals based on the patients' perspectives about the care they experienced (Centers for Medicare and Medicaid Services, 2021). The SOPS hospital survey asks healthcare providers and other staff in hospitals about their organization's support for patient safety (Agency on Healthcare Research and Quality, 2018).

The second assumption of this study is that public reporting of survey results provides incentive for hospitals to improve results in the survey domain questions and ultimately the quality of care. Existing research regarding a wide variety of clinical

outcomes supports the idea that public reporting could stimulate providers of healthcare services to focus on and improve healthcare quality (Campanella, et al., 2016).

The third assumption of this study is that public reporting of quality and outcome data serves to raise the accountability levels in healthcare through transparency of data regarding hospital care in return for the related public investment in improving quality and lowering healthcare expense (Campanella, et al., 2016).

Scope and Delimitations

United States acute care hospitals who receive funding from CMS for provision of health care services will be the targeted population for this research study. The hospital value based purchasing program, patient and community engagement domain scores and total performance scores for 2021 will be utilized along with 2021 de-identifiable and identifiable data from the AHRQ SOPS with a focus on the patient safety grade reflecting perceptions of overall patient safety. Hospital value based purchasing program, Patient and community engagement domain scores, and AHRQ SOPS data will be organized by hospital and cross referenced with AHA hospital descriptors including demographic region, bed size, for profit versus not for profit, specialty, patient population, and teaching versus non-teaching status. Specific hospital permission to make AHRQ SOPS data identifiable is required from each hospital prior to release of the data. This will impact which hospitals will be represented in in the study and will limit the number of hospitals available to participate in this study. The sample size available for this study will represent a statistically significant number of hospitals from each region and will

allow overall generalizability that will be representative of a cross section of all US hospitals nationally.

Significance, Summary, and Conclusions

This study will explore the association between staff patient safety rating (PSR), the person and community engagement domain score, and the hospital value based purchasing total performance score outcomes of care composite. This study is important because there is extremely limited research that ties the patients' perceptions and satisfaction about their care, and the staff's perceptions of patient safety within hospitals with actual patient care clinical outcomes. By conducting this research, there is enormous potential for hospitals and hospital administration to be motivated to invest time and resources into non-traditional tactics and strategies that will positively impact and improve the clinical outcomes that patients experience including lower complication, mortality, and readmission rates. Strategies that focus on improving the hospital work and cultural environment, as well as staff engagement, will become essential to the overall success hospitals may experience financially and from a market and growth expansion perspective.

A leader's primary focus should be to create a culture of staff happiness that promotes a higher opportunity for hospital staff to deliver care optimal patient care by removing barriers so safe and effective care processes (Prabhu, 2018). In addition, a leader's primary job is to support staff, build strong teams, and assure adequate staffing and competency building resources to deliver the highest quality of care as is possible (Prabhu, 2018). A solid leader assures that all staff feel their opinions matter and inspires

and motives them through transformational leadership approaches (Prabhu, 2018). Focusing on patient safety, staff engagement, and therefore high quality is always associated with better improved overall performance (Prabhu, 2018).

The level of quality provided by hospitals undoubtedly reflects is organizational priorities and objectives (Chernew & Frank, 2019). Paying hospitals more is not always associated with the expectation that they would invest in resources to provide better quality (Chernew & Frank, 2019). The cost of poor staff retention rates and high turnover rates negatively impacts hospital profit margins (Shaffer & Curtin, 2020). Registered Nurse (RN) turnover rates of one percent will cost or save the average hospital $328,400 additionally (Shaffer & Curtin, 2020). The average time to fill a vacant RN position is 85 days or greater than 3 months for a specialty department with a cost for recruitment of $82,000 (Shaffer & Curtin, 2020). Hospitals that intentionally manage their cultures significantly outperform those who do not (Shaffer & Curtin, 2020). Additionally, one of the most important conclusions in literature that is related to recruitment and retention is that the same practices associated with creation of a positive work environment for nurses is also critical in securing standards consistent with high quality patient care outcomes (Shaffer & Curtin, 2020).

Reducing health care and operational expenses relies on a highly engaged workforce as well as a health care model that rewards or penalizes hospitals for the clinical patient care outcomes it delivers (LaPointe, 2018). The CMS and Humana value based purchasing models have demonstrated effectiveness in reducing cost and utilization of resources while also demonstrating improvements in patient care outcomes (LaPointe,

2018). Improving performance in the hospital value based purchasing program equation through reduction in health care expenses allows hospitals to re-invest shared savings into evidence-based leadership strategies, operational and strategic programming that will continue to not only strengthen and support staff engagement and therefore the experience of the patients, but will also cyclically improve clinical outcomes, and both short- and long-term viability of the hospital or health care system.

Section 2 Research Design and Data Collection

Introduction

The purpose of this quantitative study was to explore the association between staff patient safety grade mean rating score, the person and community engagement domain score, and the hospital value-based purchasing total performance score outcomes of care composite. It is important for organizations to focus on these topics to understand better and allocate financial resources and place strategic importance and priority around those initiatives that can not only improve market share but also improve the clinical outcomes of patients it serves. This strategic alignment will be essential to reduce overall healthcare expenses through improved quality of care outcomes.

Within Section 2 is the research design and rationale, methodology, This section includes the sampling and sampling procedures, population focus, instrumentation and operationalization of constructs, threats to validity for which the ethical procedures will be outlined, and in conclusion, an overall summary.

Research Design and Rationale

This study utilized a cross-sectional design approach that incorporated multiple secondary data sources including the CMS hospital value based purchasing program domain and total performance score for the year 2019, and the AHRQ and SOPS data for the fiscal years 2019 through 2021. The primary dependent variable is the hospital value based purchasing program total Performance Score composite. The independent variables include the staff patient safety grade mean rating score, and the person and community engagement domain score composite scores. This approach using univariate, bivariate,

and multivariate analysis was selected to examine the impacts of the patient experience and staff's perceptions about patient safety on the actual clinical outcomes of patients. To control for the variety of market and organizational characteristics, the following variables were selected: system status, organizational size, teaching status, hospital location, and staff surveyed. This cross-sectional analytical research approach was useful in investigating the association between both related and unrelated variables in the study to promote a broader perspective on what factors may influence in the clinical outcomes of patients.

A time constraint was a barrier related to the AHRQ hospital specific identifiable data for fiscal year 2021. The AHRQ data release process for specific hospital identifiable data included a process to ask for permission from each hospital to release their data. The datasets were not released until March 2022 due to the impacts of the COVID-19 pandemic. An application has been made to AHRQ utilizing the established requestor process. In addition, AHA annual survey data were requested through the Indiana Hospital Association (IHA) contacts and process for research and data requests. The CMS hospital value based purchasing program CSV file for domain and hospital value based purchasing program total performance sore are currently released and available.

Methodology

Population. The population used in this study was all U.S. acute care hospitals who participate in the Medicare program under CMS and agreed to participate in the hospital value based purchasing Program during the 2021 fiscal year. In addition, the

population was correlated with the same list of acute care hospitals participating in the CMS hospital value based purchasing program and who also administered the AHRQ SOPS in fiscal year 2021.

Sampling and sampling procedures used. In this study the 2019 hospital value based purchasing program domains including patient and community engagement domain score and the hospital value based purchasing total performance score, and the 2021 AHRQ SOPS survey patient safety rating question was utilized. : Please give your work area/unit in this hospital an overall grade on patient safety. This data element was used to examine the relationship between the patient and community engagement domain score, patient safety grade mean rating score, and the hospital value based purchasing program total performance score. The hospital value based purchasing program database contains listings for all participating hospitals and their corresponding scores for the various domains including person and community engagement, safety, clinical outcomes, safety and efficiency and cost reduction (Centers for Medicare and Medicaid Services, 2020). The total performance score is the sum of these domains (Centers for Medicare and Medicaid Services, 2020). The hospitals total performance score for the fiscal year 2021 Hospital value based purchasing program is calculated as follows: .25 X Clinical Outcomes, .25 X Person and Community Engagement, .25 X Safety, and .25 x Efficiency and Cost Reduction (Centers for Medicare and Medicaid Services, 2020).

Data from the 2021 AHRQ Hospital 2.0 survey database include 2021 surveys from 172 participating identifiable hospitals that represent 87,856 providers and staff respondents who provided an overall patient safety rating of *poor, fair, good, very good,*

and excellent to rate the patient safety culture in their units (Agency for Healthcare Research and Quality, 2021). Exclusion criteria includes any hospitals not participating in the 2021 AHRQ SOPS and therefore not included in this dataset. The data set contains voluntarily submitted data elements by participating hospitals and is not representative of all US hospitals. To access this data, an application to the Agency for Healthcare Research and Quality was made to gain access to hospital level identifiable data for the fiscal years of 2018 and 2021. The 2018 data will be compared with 2021 data to establish consistency in patient safety ratings over the three-year team span.

Instrumentation and Operationalization of Constructs. The CMS HVBPP database is a reliable source of data to represent hospital level quality performance elements organized in the measurement domains. The scores are formulated and derived from final coded and billed diagnoses related groupings reflective of acute care services provided in U.S. hospitals nationally and billed to CMS. The AHRQ SOPS is a nationally recognized and widely used survey assessment tool with an established reliability and statistical basis that has been used since 2004 to evaluate perceptions about patient safety culture (Agency for Healthcare Research and Quality, 2021).

The hospital survey version that will be utilized in this study is Hospital Survey version 2.0. This hospital survey is designed to measure beliefs, values, and norms shared by healthcare practitioners and staff that make up the patient safety culture in the organization that may influence their actions and behaviors (Agency for Healthcare Research and Quality, 2021). Patient safety culture is measured by determining what is attitudes and behaviors are supported, expected, rewarded, and accepted related to patient

safety (Agency for Healthcare Research and Quality, 2021). The 2.0 survey has a total of 40 survey items with eight being single items measures and 32 survey items grouped into ten composite measures (Agency on Healthcare Research and Quality, 2021). The survey includes a 5-point agreement scale or frequency scale and has a section at the end for open-ended questions (Agency on Healthcare Research and Quality, 2021). Surveys administered without modifications are considered a valid trademarked SOPS survey (Agency on Healthcare Research and Quality, 2021). Supplemental or custom items may also be added and administered provided the core survey questions are maintained (Agency on Healthcare Research and Quality, 2021).

The survey can be administered in paper or web survey version and can be set up as a confidential survey where the survey administrators can link the responses to individuals but maintain processes to ensure identifiable data will not be release (Agency on Healthcare Research and Quality, 2021). The other alternative is anonymous, in which the organization is unable to track respondents (Agency on Healthcare Research and Quality, 2021). If the survey is administered to multiple hospitals in a system, hospital identifiers should be utilized to associate results with the appropriate facility (Agency on Healthcare Research and Quality, 2021). The survey can be completed by all types of hospital staff, include housekeeping, security, nurses, and hospital leaders (Agency on Healthcare Research and Quality, 2021). Hospital based physicians or physicians with hospital privileges can also be asked to respond to the survey and are asked to identify which hospital or which hospital unit their answers refer to when responding to the survey questions (Agency for Healthcare Research and Quality, 2021). Thirty to fifty

percent completed survey responses are expected from the targeted population of respondents (Agency on Healthcare Research and Quality, 2021). AHRQ provides a data entry and analysis tool to input respondent-level data from the survey which allows tables and graphs to automatically be displayed and produces results broken out by unit/work area, staff position, interaction with patients and unit level tenure (Agency on Healthcare Research and Quality, 2021). Official survey response rates are calculated by number of surveys returned over number of eligible providers and staff who received the survey (Agency on Healthcare Research and Quality, 2021). AHRQ has established a repository database for all survey data which allows benchmarking and comparison with all hospitals entering survey results in the database (Agency on Healthcare Research and Quality, 2021).

The survey question chosen out of the SOPS survey for the purposes of this study to compare with the HVBPP TPS is the question: How would you rate your unit/work area on patient safety? The responses are represented on a 5-point scale including a score of 1 representing *poor*, 2 representing *fair*, 3 representing *good*, 4 representing *very good*, and 5 representing *excellent* (Centers for Medicare and Medicaid Services, 2021) . This is represented in Section E of the survey and reflects the overall patient safety rating (Centers for Medicare and Medicaid Services, 2021).

Hospital-based episode measures represent payment standardized, risk adjusted episode payments after controlling for geographic variation in payment rates within the beneficiary case mix indexes to calculate HVBPP values (Centers for Medicare and Medicaid Services, 2020). The data used in the HVBPP is derived from Medicare Parts A

and B claims (Centers for Medicare and Medicaid Services, 2020). Percentage payment summary reports for fiscal year 2021 are utilized using the Percentage payment summary report that provides hospitals with their Total Performance Score and value-based incentive payment percentage that is applied to each Medicare fee-for service discharge in FY 2021 (Centers for Medicare and Medicaid Services, 2020).

The statutory requirements for the HVBPP program are set forth in Section 1866 of the Social Security Act and includes selected measures specified under the Hospital Inpatient Quality Reporting (IQR) program (Centers for Medicare and Medicaid Services, 2021). Hospitals are scored on measure such as mortality and complications, healthcare-associated infections, patient safety, patient experience, and efficiency/cost reduction (Centers for Medicare and Medicaid Services, 2021). Each hospital earns two scores on each measure representing achievement and improvement (Centers for Medicare and Medicaid Services, 2021). The final score for each measure represents the higher of these two scores representing their performance during their performance compared to the prior baseline period (Centers for Medicare and Medicaid Services, 2021).

The Person and Community Engagement Domain Score domain selected for the purposes of this study is a set of questions from HCAHPS data submitted by hospitals through the HCAHPS data warehouse in the Inpatient Quality Reporting (IQR) Program (Centers for Medicare and Medicaid Services, 2021). Hospital eligibility to participate to report HCAHPS data in the HVBPPP includes the requirement to participate in the Inpatient Prospective Payment System (IPPS), must be located in the 50 states of D.C, be

open during the performance period, pass the annual payment updated requirements, and have at least 100 completed surveys during the performance period (Centers for Medicare and Medicaid Services, 2021). A CMS top box raw score is formulated by CMS for the nine HCAHPS measures used in the patient experience of care domain. The nine measures are compiled from six composite measures including communication with nurses, communication with doctors, staff responsiveness, communication about medications, care transitions and discharge information (Centers for Medicare and Medicaid Services, 2021). The two individual measures include cleanliness and quietness of hospital environment (Centers for Medicare and Medicaid Services, 2021). There is one global measure that represents the overall hospital rating and known as the overall rating of care (Centers for Medicare and Medicaid Services, 2021).

This overall rating is not utilized in the patient experience of care domain (Centers for Medicare and Medicaid Services, 2021). CMS applies the patient mix and survey mode adjustment for each of the nine HCAHPS measure to obtain unrounded patient-mix-adjusted scores as well as to adjust scores to the effect of mode survey administration (Centers for Medicare and Medicaid Services, 2021). CMS applies survey mode adjustment for each of the nine patient experience of care domains as well as a base and consistency score (Centers for Medicare and Medicaid Services, 2021). An unweighted patient experience of care domains score from each hospital is calculated for each hospital by summing the hospitals HCAHPS based score and consistency score (Centers for Medicare and Medicaid Services, 2021). Both the Person and Community

Engagement Domain Score domain score and the HVBPPP TPS score are contained in the CSV file obtained from CMS for the FY 2021.

International Business and Marketing (IBM) Statistical Package for the Social Sciences (SPSS) software will be utilized along with Microsoft excel to organize and correlate the HVBPPP TPS, PCEDS domain score, and the AHRQ patient safety rating for each specific hospital. Hospitals that participated in the HVBPPP program for 2021, who reported the PCEDS domain score, as well as conducted the AHRQ SOPS will be utilized in this study. The study's key dependent variable is the HVBPPP TPS and the key independent variables are the HVBPPP PCEDS domain score and the AHRQ patient safety rating score. To control for different market and organizations characteristics, each of the following variables are selected: organizational ownership, hospital type, region, staff surveyed, and bed size.

Organizational size is defined and categorized by staffed bed size in categories for 6-24 beds, 25-49, beds, 50-99 beds, 100-199 beds, 200-299 beds, 300-399 beds, 400-499 beds and 500+ beds. Organizational size it utilized as an indication for hospital quality. Organizational ownership is being defined by categories including Government, nonfederal, non-government not for profit, Investor Owned, and Government Federal. Hospital type or Teaching status has a demonstrated correlation with patient safety scores and will serve as a key control variable (Haley, Hamadi, Zhao, Xu, & Wang, 2017). Organization location (region) reflects what geographic region the hospital is located and will service as a binary variable that speaks to resource viability within the organization. Regions include the United States regions of New England, Mid Atlantic, South Atlantic,

North Central, South Central, and West North Central, Mountain and the Pacific and associated territories. Staff surveyed represents consideration for if the hospital chose to survey All Staff or a sample of all staff, if only selected departments and units were sampled, if only certain staff positions only were selected, or if a combination of selected departments/units and selected staff positions were selected to participate in the survey. Staff population surveyed is represented as an indicator for understanding better the hospital resource allocation decisions for investment in the AHRQ survey process.

RQ1: In the reporting year of fiscal 2021, how do patient safety grade mean rating scores impact value based purchasing total performance scores?

Null: There is no statistically significant impact between staff patient safety grade mean rating scores and the hospital value-based purchasing program total performance scores.

Alternate: There is a statistically significant impact between staff patient safety grade mean rating scores and the hospital value-based purchasing program total performance scores.

RQ2: In the reporting year of 2021, how does person and community engagement domain score impact the hospital value-based purchasing program total performance scores?

Null: There is no statistically significant impact between the person and community engagement domain Score and the hospital value based purchasing program total performance scores?

Alternate: There is a statistically significant relationship between the person and community engagement domain score and the hospital value-based purchasing program total performance scores?

Statistical tests that will be utilized for the purpose of this study include examining the data for normality using skewness/kurtosis and in addition multicollinearity using a Pearson correlation matrix with all correlation's coefficients <60. Percentages for categorical variables and means for continuous variables will be utilized. A multivariable linear regression analysis will be conducted to examine the relationship between PCEDS, the PSGMRS, and the HVBPP TPS organized by selected hospital characteristics. The results will be represented as predicted probabilities utilizing a 95% confidence interval. Statistical significance differences will be evaluated using a 2-sided t test with (P=.05).

Threats of Validity

There are potential threats to both internal and external validity for the purposes of this study. External validity challenges exist relative to how applicable and generalizable the study results may be because this study utilizes data from at least two different databases including the CMS hospital value-based purchasing program data base, and the AHRQ SOPS database. Within the CMS database the Patient and Community Engagement Domain scores are gathered from the HCAHPS survey instrument results that measure patients' perceptions about their experience of care. This combination of databases, measurement tools, and research hypothesis inherently promotes influence on the sample size and the hospitals that are included in the study. For

example, the overall sample size and hospitals in the study are influenced by the number of hospitals that have administered the AHRQ survey that have agreed to release their identifiable data. This survey release methodology is limiting to the number of hospitals and respondents included in the survey sample. This could mean that not only is the N size lower, but also an influence on the multivariate analysis that results. For example, if a substantial proportion of the participating hospitals are found to community based, for profit, rural, and not a part of a health system, the results may not be applicable or generalizable to urban, not for profit hospitals that are part of a health system and may potentially have a separate set of resources to rely on.

Databases and therefore survey instrument choices in this study may create challenges to the construct validity for assuring the survey tools are measuring what they say they are measuring. Both the HCAHPS patient satisfaction and the AHRQ SOPS instruments survey respondents about their perceptions and opinions. The HCAHPS survey gathers patient or family respondent information about their experience about their inpatient hospital care. The AHRQ SOPS survey gathers staff respondent information about their perceptions of the patient safety culture on their work units. Both rely on subjective data. Consideration for the fact that those answering the survey may be more or less satisfied than representative of the entire population should be made. If patients or staff are disgruntled it is possible that they may choose to fill out the survey perhaps more or less often creating a sampling bias. A Hawthorne effect could result from employees feeling concerned, for example, that their identity will be known when taking the SOPS could influence their honesty in answering the questions truthfully.

Ethical Procedures. The researcher requested data regarding staff perceptions of safety from the 2018 and 2021 AHRQ databases through the established formal data request process outlined on the AHRQ SOPS website. The SOPS data request includes submission of the request with screening and approval through Westat. Westat is an employee-owned professional service company from Rockville Maryland who provides research services to agencies including the US government, state, and local, as well as private businesses and foundations (Westat, 2021). Westat screens and evaluates all requests on behalf of AHRQ and forwards requests for data once the request meets all guidelines established to AHRQ.

This study, its data sources and methodology will be evaluated through the Walden University Institutional Review Board (IRB) approval process. The IRB ethics review process will ensure that the research study complies with all university and national research ethical standards and US federal regulations (Walden University, 2021). The Walden University IRB process involves submitting a form to request appropriate documents, preparing those required documents, and submitting documents for an official ethics review (Walden University, 2021).

Summary

This study is a cross sectional multivariate quantitative research study that explores the association between the patient safety grade mean rating score the person and community engagement domain score, and the hospital value-based purchasing program total performance score outcomes of care composite using secondary data from the years 2019, and 2021.

Section 3: Presentation of Results and Findings

This research study involved analyzing data from the 1.0 2021 AHRQ SOPS survey and the 2019 CMS hospital value-based purchasing program total performance score dataset. These AHRQ SOPS survey dataset contains data from the measurement period of December 2017 and October of 2020. The 2019 CMS hospital value-based purchasing program total performance score dataset measurement period includes data primarily from January through December of 2017 but utilizes mortality data from as far back as July of 2016 through June 30th of 2017. This CMS dataset was selected as it represents the most recent and complete dataset available. The most complete sets of data available from before the COVID-19 pandemic was also selected to establish a baseline of data from both AHRQ and CMS that would not be influenced by effects of the pandemic. The data was used to assess the relationship between staff's perception of patient safety as represented by the patient safety grade mean rating score, the patient and community engagement domain scores, and the total performance scores. The hypotheses examined in this study is the evaluation of the relationship for statistical significance of the value based purchasing total performance score with the patient safety grade mean rating score and the person and community engagement domain score. This section includes information regarding data collection of the secondary data set and results including statistical tests utilized as well as analyses of these statistical tests, as well as a summary with answers to each research question.

Secondary Data Set and Data Collection

The secondary dataset for the AHRQ 1.0 2021 SOPS survey includes survey findings from 320 participating United States hospitals including 191,977 providers and staff respondents (Agency for Healthcare Research and Quality, 2021). The average hospital response rates were 60%; the average number of surveys administered per hospital was 1,108 (Agency for Healthcare Research and Quality, 2021). Sixty-eight percent of hospitals in the database utilized a combination of both paper and web survey tools versus one or the other (Agency on Healthcare Research and Quality, 2021). Fifty-seven percent of participating hospitals were smaller and had twenty-five to one hundred ninety-nine beds (Agency for Healthcare Research and Quality, 2021). Sixty-three percent of participating hospital are nonteaching, with 73% representing nongovernment and not for profit organizations (Agency on Healthcare Research and Quality, 2021). The highest participating region is the north central region with 33.3% of the total participants. (Agency on Healthcare Research and Quality, 2021). Registered and Licensed Practical Nurses were the largest staff role responding to the survey questions at 37% with 12% of the respondents being physicians (Agency on Healthcare Research and Quality, 2018). Staff and physicians rated their work area in the hospital with overall safety grades. Seventy-seven percent rated their work area as an A/ excellent (36%) or B/ very good as (41%) (Agency on Healthcare Research and Quality, 2021).

The hospital identifiable data was provided through the third-party vendor Westat on behalf of AHRQ. Each participating hospital submitted individual level survey data (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital

Survey 1.0, 2022). The data was evaluated for response biases including responses with the same answers for all positively and negatively worded items (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022). Response frequencies were reviewed for out-of-range values, mission values or data anomalies (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022). Hospitals were contacted and corrections were requested as well as resubmission of their data files (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022). Close to 80 hospitals consented to releasing their hospital identifiable SOPS Survey data (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022).

The majority of the survey questions ask survey participants to answer using a 5-point response scale ranging from always to never, strongly agree to strongly disagree, with the exception of overall patient safety grade which is reported as excellent to very poor (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022). Westat sought permission from all participating hospitals to release their hospital identifiable data for research purposes (Agency for Healthcare Research and Quality Surveys on Patient Safety Culture Hospital Survey 1.0 , 2022).

The 2019 CMS hospital value based purchasing program file contains domain and total performance scores for all United States Hospitals participating in the fiscal year 2019hhospital value based purchasing program. The domains include non-weighted and weighted domain scores for clinical outcomes, person and community engagement, safety

domain, efficiency and cost reduction and Total Performance Scores (Centers for Medicare and Medicaid Services, 2020). The 2019 hospital value-based purchasing program CMS file contains these domain scores for 2732 hospitals.

The 2021 AHRQ SOPS survey and the 2019 CMS hospital value-based purchasing program total performance score file was merged in SPSS utilizing the data merge add variable's function. This data file merge was organized by Medicare Provider Number/Facility ID for both datasets. This resulted in a merged data file containing 70 United States hospitals representing both AHRQ SOPS data and the CMS hospital value-based purchasing program domain and total performances scores. A data cleaning document, format listings, and code book files were provided with the data set from Westat.

A linear regression analysis was performed using a multivariable approach to examine the relationship between person and community engagement domain score, patient safety ratings (mean grade), and hospital value-based purchasing total performance score by hospital characteristics. Results are represented as 95% confidence intervals as predicted probabilities. A 2-sided P=.05 was set to represent statistical significance and a student t test was performed to assess statistically significant differences. SPSS software version 27 was utilized to conduct all statistical analysis.

A cross sectional approach for analysis was utilized using the AHRQ 2021 1.0 SOPS Survey and the 2019 CMS hospital value-based purchasing program total performance score data sets. Univariate, bivariate, and multivariate analysis was used to examine the impact of the patient experience of care, staff perceptions of patient safety

(patient safety grade ratings) on their work units, and the total performance score as an indicator of patient care outcomes. Preceding the multivariate analysis, the data were evaluated for normality using kurtosis/skewness testing. Pearson correlation including all correlation coefficients less than 60 was used to evaluate multicollinearity. Percentages were utilized to represent categorical and continuous variables.

Results

Study findings were compiled after a thorough analysis from the merged sample of 70 United States hospitals participating both in the 2019hospital value-based purchasing program, and the 2021 AHRQ SOPS survey process. Study sample inclusion criteria included those U.S. hospitals who were participants in the CMS hospital value-based purchasing program for FY 2019 and out of that sample of hospitals, were those hospitals that also administered the AHRQ Survey on Patient Safety using the 2021 1.0 version. Only those hospitals meeting both inclusion criteria and who were agreeable to allow their data to be identifiable to share their data were included in this study. In addition, the sample N size was reduced to 63 hospitals to assure that all key variables were complete and available for the purposes of analysis in this study. Organizational characteristics of these 63 hospitals are reported in Figure 1.

The linear regression analysis (adjusted R) revealed that 26.5% of the variance of the independent variables is explained by the independent variables. With a P value (ANOVA) 0.00 with statistical significance at <0.05, the Person and Community Engagement Domain was found to have a statistically significant relationship to the total

performance score at 0.00. The patient safety grade at 0.346 was found not to have a statistically significant relationship with the total performance score. For every .283-point increase in the independent variable, person and community engagement scores, a resultant increase in total performance score of 1.056 would result. Conversely for every 6.569 increase in the independent variable of patient safety grade, a resultant increase would occur of 6.054 in the total performance score.

In addition, for every full one standard deviation of person and community engagement domain, the total performance score increases by 0.468 standard deviations. For every full standard deviation of the patient safety grade, it would be expected that the total performance score will increase by 0.19 standard deviations. It is with 95% confidence that the actual value of the unstandardized co-efficient is between 6.685 and 18.794. Refer to Figure 2 for details.

Figure 1

Descriptive Statistics of Hospitals' Organizational Characteristics

All Hospitals		
Descriptive Characteristics	**Mean (n=63)**	**SD**
Value Based Purchasing Person and Community Engagement Domain Score	8.525	4.33
Value Based Purchasing Total Performance Score	38.447	9.76
AHRQ Patient Safety Grade	4.037	0.19
Categorical Variables	**Percentage (n=63)**	**Population**
Bed Size		
6-49	9.5	6
50-199	44.4	28
200-399	41.3	26
400-499	1.6	1
500+	3.2	2
Type of Hospital		
Teaching	41.3	26
Non-Teaching	58.7	37
Hospital Ownership		
Government, Non-Federal	12.7	8
Non-Government, not for Profit	82.5	52
Investor Owned	4.8	3
Census Divisions (Region)		
New England	7.9	5
Mid Atlantic	3.2	2
South Atlantic	15.9	10
North Central	33.3	21
South Central	3.2	2
W. North Central	4.8	3
W. South Central	27.0	17
Pacific	4.8	3
Staff Surveyed		
All Staff	93.7	59

Figure 3 displays multivariable univariate analysis results using Pearson Correlation. A Pearson product-moment correlation coefficient was performed to evaluate the null hypothesis that there is no relationship between the value based purchasing total performance score, person, and community engagement domain score, and the AHRQ survey on patient safety patient safety grade mean rating score (*N*=63). This analysis demonstrated that there were no violations in the assumptions of normality, linearity, and homoscedasticity. Refer to scatterplots in Appendix A-1 and A-2. A Pearson Correlation was performed to evaluate the strength of the relationship between variables, both positive and negative relationships were noted. The value Based purchasing total performance score and the person and community engagement domain score was found to have a significant positive relationship between the two variables, (0.00) with a Pearson Correlation (.509) at the 0.01 level (2 tailed) with a large strength in relationship (Cohen, 1988). The hospital value based purchasing total performance score and patient safety grade mean rating score was also found to have a significant positive relationship (0.05) with a Pearson Correlation (.352) at the 0.01 level (2 tailed).This reflected a medium strength in relationship (Cohen, 1988). The value based purchasing total performance score and hospital bed size was found to have a significant negative relationship (0.003) with a Pearson Correlation (-.373) at the 0.01 level (2 tailed). All other variables were not found to have a statistically significant relationship with the hospital value based purchasing total performance score.

The variance inflation factor (VIF) was the primary consideration used for analysis e for multicollinearity or high inter-correlations between two or more

independent variables in the multiple regression model. All the variables exhibited a VIF of 1.610 or below with no tolerance below 0.1 therefore no concerns for significant multicollinearity were identified (Appendix, Chart 3).

Figure 2

Regression Analysis, ANOVA, and Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	5.004	24.622		0.203	0.840	-44.248	54.255		
	Weighted Person and Community Engagement Domain Score	1.056	0.283	0.468	3.729	0.000	0.489	1.622	0.752	1.330
	Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean	6.054	6.369	0.119	0.951	0.346	-6.685	18.794	0.752	1.330

a. Dependent Variable: Total Performance Score

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.538[a]	0.289	0.265	8.373610855	1.902

a. Predictors: (Constant), Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean, Weighted Person and Community Engagement Domain Score

b. Dependent Variable: Total Performance Score

Bootstrap for Model Summary

Model	Durbin-Watson	Bootstrap[a]			
		Bias	Std. Error	95% Confidence Interval Lower	Upper
1	1.902	-0.605	0.227	0.869	1.791

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1709.602	2	854.801	12.191	0.000[b]
	Residual	4207.042	60	70.117		
	Total	5916.644	62			

a. Dependent Variable: Total Performance Score

b. Predictors: (Constant), Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean, Weighted Person and Community Engagement Domain Score

Figure 3

Total Performance Score, Person and Community Engagement, and Patient Safety Grade mean Rating Score

Correlations

		Total Performance Score	Weighted Person and Community Engagement Domain Score	Hospital ownership	Type of hospital (teaching or non-teaching)	Staff surveyed (e.g., sample, select staff)	Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean	Bed size category	Census divisions
Total Performance Score	Pearson Correlation	1	0.509**	0.148	-0.174	0.035	0.352**	-0.373**	-0.146
	Sig. (2-tailed)		0.000	0.246	0.171	0.783	0.005	0.003	0.254
	N	70	70	63	63	63	63	63	63
Weighted Person and Community Engagement Domain Score	Pearson Correlation	0.509**	1	0.108	-0.258*	-0.099	0.498**	-0.502**	0.065
	Sig. (2-tailed)	0.000		0.401	0.041	0.441	0.000	0.000	0.613
	N	70	70	63	63	63	63	63	63
Hospital ownership	Pearson Correlation	0.148	0.108	1	-0.152	0.043	0.186	-0.179	-0.045
	Sig. (2-tailed)	0.246	0.401		0.234	0.736	0.145	0.161	0.725
	N	63	63	63	63	63	63	63	63
Type of hospital (teaching or non-teaching)	Pearson Correlation	-0.174	-0.258*	-0.152	1	0.040	-0.304*	0.381**	0.100
	Sig. (2-tailed)	0.171	0.041	0.234		0.758	0.015	0.002	0.437
	N	63	63	63	63	63	63	63	63
Staff surveyed (e.g., sample, select staff)	Pearson Correlation	0.035	-0.099	0.043	0.040	1	0.016	-0.094	-0.113
	Sig. (2-tailed)	0.783	0.441	0.736	0.758		0.901	0.465	0.380
	N	63	63	63	63	63	63	63	63
Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean	Pearson Correlation	0.352**	0.498**	0.186	-0.304*	0.016	1	-0.393**	0.231
	Sig. (2-tailed)	0.005	0.000	0.145	0.015	0.901		0.001	0.068
	N	63	63	63	63	63	63	63	63
Bed size category	Pearson Correlation	-0.373**	-0.502**	-0.179	0.381**	-0.094	-0.393**	1	0.036
	Sig. (2-tailed)	0.003	0.000	0.161	0.002	0.465	0.001		0.777
	N	63	63	63	63	63	63	63	63
Census divisions	Pearson Correlation	-0.146	0.065	-0.045	0.100	-0.113	0.231	0.036	1
	Sig. (2-tailed)	0.254	0.613	0.725	0.437	0.380	0.068	0.777	
	N	63	63	63	63	63	63	63	63

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Summary

This study provides important perspectives and insight into the relationships between the hospital value based purchasing total performance score as an indication of clinical patient outcomes, and the person and community engagement domain score as an indication of the patients experience and satisfaction. In addition to this, the relationship of clinical patient outcomes with the staff patient safety grade mean rating score as an

indication of the staff's perception of the patient safety culture in their work unit. Specifically, this research supported the hypothesis that hospitals with higher person and community engagement scores (patient satisfaction) had higher hospital value based purchasing total performance scores (clinical outcomes). Secondly, this research did not support the hypothesis that higher staff self-reported patient safety grade mean rating scores (safety culture on work unit) were associated with higher hospital value based purchasing total performance scores (clinical outcomes).

This study also provides important insights into the relationships between the clinical outcomes of patient, patient satisfaction, perceptions of patient safety culture and certain hospital structural characteristics. As stated, results indicate that hospitals who deliver better patient experiences also are likely to have better clinical outcomes. Bed size was found to have a significant negative correlation indicating that lower bed size is associated with a higher level of clinical outcomes. Section four will examine the implication for professional practice and social change.

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

The purpose of this quantitative study is to explore the association between staff patient safety grade mean rating score, person and community engagement domain score, and the hospital value-based purchasing program total performance score outcomes of care composite. This is essential to focus on to assure that organizations with limited financial resources, place strategic focus, performance improvement efforts, and subsequent resource allocation around improving patient experience to positively impact and improve the actual clinical outcomes of patients.

There are two key findings in this study related to the research questions. The first key finding is that there is a statistically significant relationship between the person and community engagement domain score and the hospital value based purchasing total performance score for the fiscal year 2019. The second key finding is that while there was a strong association between the variables of the AHRQ patient safety grade mean rating score and the hospital value based purchasing total performance score, there was no statistically significant relationship overall for hospitals administering the survey on patient safety culture. This survey was administered during the fiscal years 2017-2021. The sixty-three hospitals in this study included hospitals who agreed to release their identifiable data.

Interpretation of Findings

The study data confirms that there is a statically significant relationship between the person and community engagement domain score and the hospital value based purchasing program total performance score. This represents a statistically significant

relationship between how satisfied patients are with their experience of care and the actual clinical outcomes they experience. These study findings are consistent with many related peer-reviewed studies previously conducted. Haley et al., (2017), demonstrated a positive relationship between the CMS hospital value based purchasing outcome and the patient experience of care domains (Haley et al., 2017). This study was like the framework in that study and utilized the Donabedian model in a similar fashion to organize the structure and processes to evaluate the clinical outcomes of patients (Haley et al., 2017). This study adds to the body of knowledge and further reinforces the positive relationship between patient satisfaction and the clinical outcomes of patients. Many studies have been successful in linking positive patient experiences with leadership relationships staff engagement and culture of safety (Parr et al., 2020).

Janes et al., (2021), associated staff engagement with improved patient satisfaction, safety, and quality outcomes. The established association between patient satisfaction and the actual clinical outcomes of patients provides similar confirmation of this relationship in this study.

The Donabedian model that served as conceptual framework in this study supports a framework of the structure, process, and outcomes to describe influences on evaluating the quality of care (Berwick & Fox, 2016). The hospital value based purchasing total performance scores was analyzed using multiple variables to understand better what did or did not influence the clinical outcome measurement. This was useful to understand the relationship with the patient experience and its role in evaluating the quality of care.

Limitations of the Study

Two separate databases were utilized to provide important insight into the relationship between the CMS hospital value based purchasing total performance score comprised of four domains, one of which is the person and community engagement domain score, and the AHRQ patient safety grade rating mean score. This research should not be generalized to other patient satisfaction outcome measurements outside of the federally administered HCAHPS survey or surveys about patient safety culture outside of the AHRQ Survey on Patient Safety. In addition, the hospital sample was limited. While there were 320 US hospitals that participated in the 2021 1.0 AHRQ SOPS survey, only 99 hospitals agreed to release their data for study purposes. This sample size was further reduced based on inclusion criteria to include only those hospitals with the same facility ID that could be linked to corresponding hospitals with the same facility ID who both participated in the CMS hospital value based purchasing program and had an associated total performance score. While the AHRQ SOPS survey sample included 49, 589 observations and 96 different variables, it is difficult to generalize these findings from 63 hospitals to represent the entire population of US hospitals participating in the survey for the measurement period. It is also impossible to understand without further analysis if there were positive associations or correlations between all the other domains in the CMS hospital value-based purchasing program as well as the AHRQ survey on patient safety variables.

Hospitals who do not participate in the hospital value based purchasing program may not behave consistently with those hospitals that do participate in the program and

similarly additional research should be conducted to compare results for non AHRQ SOPS Survey and non-hospital value based purchasing hospitals with these findings. While the findings of this study demonstrated an association between the person and community engagement domain Score, the AHRQ patient safety grade mean rating score, and bed size, an association is not an indication of causation.

Recommendations

Future research should focus on identifying the causation of higher and lower clinical outcome domain measures and their specific relationships, with hospital structural characteristics, and process of care metrics. It is also important to study and understand if hospitals investing increased resources into improving patient experience or culture of safety, also invest increased resources into improving clinical outcomes and to what degree of influence investment of resources affords better clinical outcome results. It is possible that many variables exist that may positively or negatively influence patient experience and therefore patient clinical outcomes. Technology, socioeconomic status, better informed consumers, patient attitude, relationships and communication with health care providers may also separately influence the clinical outcomes of patients. More research is needed to understand all these important relationships.

There are several research findings associating the culture of safety, relationships with coworkers and leaders, leadership styles, and staffing models with the levels of staff engagement and satisfaction (Carthon, et al., 2019). In addition, many studies successfully correlate and associate higher patient satisfaction with higher health care

staff engagement (Dempsey & Assi, 2018). Additional research should be conducted to tie in the clinical outcomes of patients to staff engagement and patient satisfaction.

In addition, there is much variation in hospital characteristics, approach and focus on process improvement, and resource allocation patterns. A deeper analysis is warranted to better understand the relationships of these variables with both improvement of patient experience and clinical outcomes of patients. Examining larger sample sizes of hospitals is essential to understanding the widespread applicability of the findings in this study.

Implications for Professional Practice and Social Change

Despite the limitation noted in this study, it provides relevant and important insights in the relationship between the CMS hospital value based purchasing total performance score, the person and community engagement domain score, and certain hospital characteristics. The findings suggest that hospitals that have better patient experiences are more likely to have better patient and clinical outcomes. Hospital characteristics including bed size have a significant correlation with patient outcomes (Haley et al., 2017). It is very important for policy makers including the US government to examine these various associations to understand and align pay for performance programs incentives to focus on tying higher reimbursement to those elements like patient experience to deliver better outcomes to their populations (Chernew & Frank, 2019). Higher quality and improved patient care outcomes is directly associated with lowering the cost of health care (Chernew & Frank, 2019).

The findings presented in this study is especially important for hospital leaders whose hospitals participate in the value based purchasing program. It is vital for hospital

leaders to understand factors that are positively associated with improving patient experience and outcomes as the corresponding payment model ultimately drives the budget process and subsequent allocation of resources (Haley et al., 2017).. If leaders understand the factors that will improve hospital quality of care, they can directly impact financial incentives and financial outcomes for the organization by focusing on improving patient satisfaction as a means of improving clinical outcomes (Wynn, 2016).

Improving financial outcomes for hospitals through the delivery of high-quality services and better patient outcomes provides promise to the future sustainability and access to health care for the individual patient, the family, and the community as a whole (Department of Health and Human Services, 2021)

Conclusion

This quantitative research study has positively identified that when patients have higher patient satisfaction, and better experiences and perceptions of care, they also demonstrate better clinical outcomes. While not statistically significant, a positive correlation was demonstrated between the staff's perceptions of the patient safety culture on their work units and the clinical outcomes of patients. In addition, smaller bed size was also found to be positively associated with better clinical outcomes of patients. Understanding these relationships is essential for hospitals to better understand how to prioritize and strategically focus allocation of limited financial resources to assure adequate investment in initiatives that will improve patient experience and therefore improve the clinical outcomes of patients. This will result in higher reimbursement and improved organizational financial outcomes.

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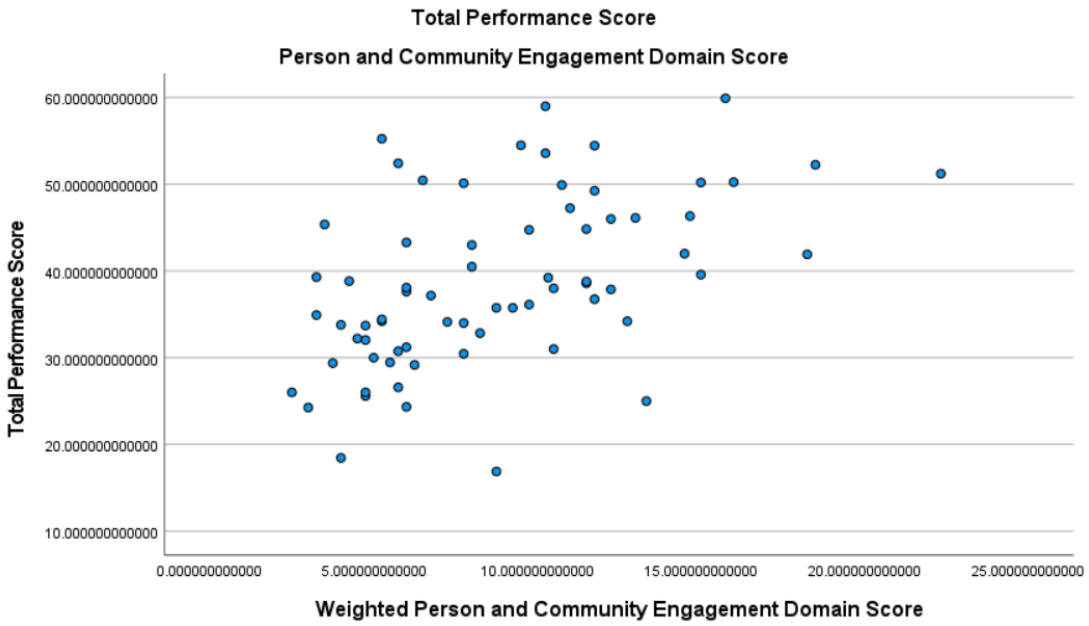
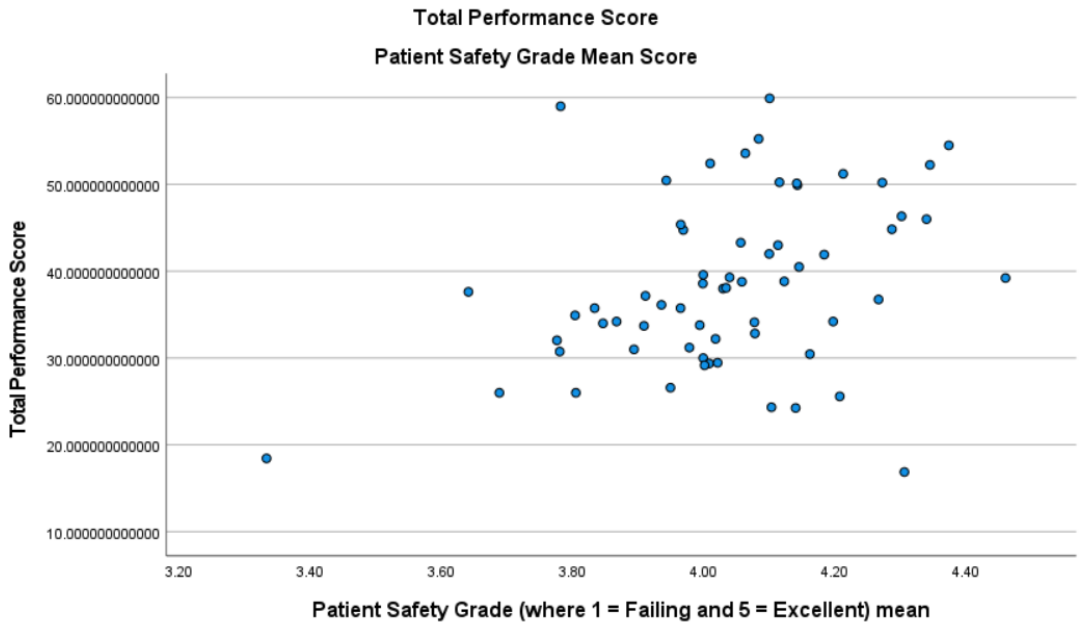
Appendix A- Scatter Plot Total Performance Score and Person and Community Engagement Domain Score



Appendix B- Scatter Plot Total Performance Score and Person and Patient Safety Grade Mean Rating Score



Appendix C- Multicollinearity Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.462	27.541		0.089	0.929	-52.731	57.656		
	Weighted Person and Community Engagement Domain Score	0.962	0.312	0.426	3.080	0.003	0.336	1.587	0.621	1.610
	Patient Safety Grade (where 1 = Failing and 5 = Excellent) mean	7.745	6.931	0.153	1.117	0.269	-6.145	21.635	0.638	1.568
	Bed size category	-0.647	0.918	-0.096	-0.705	0.484	-2.487	1.192	0.641	1.560
	Census divisions	-0.946	0.539	-0.203	-1.756	0.085	-2.025	0.134	0.889	1.124
	Staff surveyed (e.g., sample, select staff)	0.890	2.560	0.039	0.348	0.729	-4.240	6.021	0.940	1.064
	Type of hospital (teaching or non-teaching)	0.892	2.404	0.045	0.371	0.712	-3.926	5.710	0.798	1.253
	Hospital ownership	1.249	2.655	0.053	0.470	0.640	-4.072	6.570	0.942	1.062

a. Dependent Variable: Total Performance Score