

2023

## Examining the Relationship between Patient Care Quality, Patient Care Safety, and Socioeconomic Status in Chicago's Acute Care Hospitals

Theresa Ann Doby  
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# Walden University

College of Management and Human Potential

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Theresa Ann Doby

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Walden University

2023

Abstract

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Socioeconomic Status in Chicago's Acute Care Hospitals

by

Theresa Doby

M.Div., McCormick Theologian Seminary, 2018

MPH, Roosevelt University, 2016

MA Bioethics, Trinity International University, 2016

Doctoral Study Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Healthcare Administration

Walden University

February 2023

## Abstract

Ensuring high quality and safe patient care are among the main goals of all acute care hospitals. This study found that quality of patient care is not consistent across all patient populations, which draws attention to the issue of disparity in access to safe and quality health care. The purpose research questions of this quantitative study examined if patient care quality and safety are related to hospitals' socioeconomic status (SES) among Chicago's acute care hospitals. Secondary data were derived from a sample of 20 acute care hospitals (i.e., 10 acute care hospitals of high SES and 10 of low SES) in Chicago that were determined using Medicare's Disproportionate Share hospital designation. Statistical Package for the Social Sciences software was used during data analysis. Independent samples *t* tests and binary logistic regression were used to examine the associations between dependent variables and the independent variable. According to logistic regression models, neither patient care quality,  $p = .787$ , nor patient care safety,  $p = .626$ , were different between hospitals with low SES and hospitals with high SES. The results of this study could lead to positive social change through helping improve patient care safety and quality in acute care hospitals. By understanding that hospitals' SES does not infer quality and safety of care, acute care hospitals can work on individual-level factors, such as staffing, involvement of nurses in decision making, and hygiene management, to improve the quality and safety of patient care and enhance patients' satisfaction with care.

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## Dedication

This project is dedicated to God, the creator, my source of motivation and my foundation of strength, knowledge, wisdom, and understanding. Only on His wings have I risen, and He has given me resilience from the start to the end of this project. I also dedicate this research to my family who supported me till the completion of my work. They fully encouraged me to attentively accomplish the work with full confidence. The Holy Trinity and to the memory of my family who believed in my abilities to earn a doctorate degree: Mr. Ronald Doby, Mr. and Mrs. Willie Moss, Mr. and Mrs. George Cunningham, Mr. Charles Goodrum, and all the people in my life who touch my heart, I dedicate this research.

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## Section 1: Foundation of the Study and Literature Review

### **Introduction to the Study**

Data from diagnosed single and multiple chronic conditions indicates that 1 in every 4 Americans has an underlying chronic condition (Boersma et al., 2020). According to Bhatt and Bathija (2018), chronic diseases, like diabetes, cancer, and heart diseases, account for nearly 70% of deaths in the United States. Studies have also shown that people from lower socioeconomic backgrounds are highly associated with poor self-reported health outcomes, have reduced life expectancy, and are vulnerable to chronic diseases (Arpey et al., 2017; McMaughan et al., 2020; Wang & Geng, 2019). Chronic conditions affect the health of tens of thousands of the country's vulnerable communities and consume a considerable proportion of the health care budget in counties and states (Bhatt & Bathija, 2018). Health care policymakers are challenged to align patient management with the quality of care received by patients. Health care leaders are also required to align the delivery of chronic care with the quality metrics.

The purpose of this quantitative study was to examine if patient care quality and safety are related to hospitals' socioeconomic status (SES) in Chicago's acute care hospitals. The sample included acute care hospitals that provide acute and general health care to patients in Chicago, Illinois. Ensuring good quality of patient care and high standards of patient care safety are the primary goals of health care leaders (Freeman et al., 2020; Gonzalo et al., 2018). SES has been associated with several aspects of health care services, including determining the quality of health services provided to the patients, patient insurance coverage, and overall patient outcomes (Call & Miedema,

2018; Jordans et al., 2019). Focusing on the state of Illinois was essential to understanding the impact of SES on health care access and delivery because urban areas have diverse groups of individuals from different socioeconomic backgrounds. The results may inform models that can enhance the provision of safe and quality patient care for diverse urban populations. This understanding may lead to positive social change through determining whether differential health outcomes are affected by a hospital's SES.

In this section, I discuss the background of the topic, problem statement, purpose statement, research questions, theoretical framework and literature search strategy, literature review related to key variables and concepts, definitions of terms, assumptions, delimitations, and significance. The section concludes with a summary of key points.

### **Background**

Urban areas may be excluded from access to the much-needed health care services due to the continuing transformations in health care (Ahmed et al., 2016; Jin et al., 2017; Koosters et al., 2018; Sweeney et al., 2018). Currently, the major health care transformations in the US include implementation of alternative payment models and introduction of new models of provider organizations (Burns & Pauly, 2018). While these transformations do not seek to shift risk to providers, they intend to make them more accountable for the quality and cost of health care. Urban health care systems in Illinois are not different from any other system across the United States (Freeman et al., 2020; Gonzalo et al., 2018; Howard-Anderson et al., 2016; Koch & Geller, 2019; Rethy et al., 2019). Metropolitan areas with low-income populations have prominent disparities in

health care quality and safety as compared to areas with high-income populations (Alhassan et al., 2015; Cheng & Michael, 2014). According to Arpey et al. (2017), persons from low-socioeconomic backgrounds receive limited access to medications and health care due to the high costs and limited insurance coverage. While local health care providers may meet the required standards of providing quality care, low-income populations are often overlooked, a factor that contributes to increasing inequities in access to health care (Jordans et al., 2019).

Poverty and health are intrinsically connected. Middle- and low-income populations require more acute care than those from higher socioeconomic backgrounds (Arpey et al., 2017; Han et al., 2016; Hewner et al., 2016; Jordans et al., 2019). Changes in health care dynamics and increased healthcare expenses require providers to develop a strategy that will enhance the quality of services for patients regardless of race or financial status (Koosters et al., 2018; Sweeney et al., 2018). Literature on quality and safety of patient care should underscore the association between hospitals' SES and the provision of health care services. There is a gap in literature regarding the relationship between patient care safety and quality of care with the SES of acute care hospitals in urban areas. In this study, I sought to close the gap by exploring the relationship between hospitals' SES and patient care quality and safety.

### **Problem Statement**

The general problem under study was that the quality and safety of patient care in urban areas is affected by SES. Studies have shown that due to clinician bias, physicians give little attention to patients of low SES and are more likely to prescribe generic



medication to them (Arpey et al., 2017; McMaughan et al., 2020). The specific problem was that it was unknown how quality and safety of patient care in Chicago's hospitals was correlated to SES (see Call & Miedema, 2018; Jordans et al., 2019). As is the case with major urban cities, hospitals in Chicago tend to have inconsistent patient experiences based on their SES (American College of Healthcare Executives, 2022; Bhatt & Bathija, 2018; Jordans et al., 2019).

Health care is designed to provide patients with the needed care in a safe environment (Kabisch, 2019). Quality and safety are crucial to providing patients with the required care. The quality and safety of patient care is a growing concern for U.S. healthcare systems (Galama & Van Kippersluis, 2019; Garchitorena & Sokolow, 2017; Kabisch, 2019). There is evidence that significant disparities exist related to patient care quality and safety based on a patient's race, ethnicity, and gender (Kabisch, 2019; Koch & Geller, 2019). SES also contributes to the growing disparities in the quality and safety of inpatient care. I conducted this study to explore patient care quality and safety in relation to SES.

Quality and safety of patient care vary according to geographic location (Popescu et al., 2019). There is a profound disparity in the quality and safety of patient care between rural and urban regions across the United States (Bhatt & Bathija, 2018). Lack of quality and safe patient care can lead to increased morbidity and mortality rates, increased risk of hospitalization, and a significant risk of injury or death in clinical setting (Arpey et al., 2017). An examination of the quality and safety of patient care can help with an understanding of how better to improve the health care system and meet the

health care needs of patients among vulnerable communities. Growth in this understanding can lead to improved patient care safety, decreased mortality and morbidity rates, and enhanced quality of life.

I selected the city of Chicago, Illinois as the designated urban area of research. A key differentiation for Illinois from the rest of the United States is health care commercialization (Koch & Geller, 2019). Moreover, available evidence suggests that despite increased commercialization, health care quality and safety metrics have not been met for communities from low socioeconomic backgrounds (Jordans et al., 2019). Low-income populations face unique challenges in obtaining quality and safe patient care (Arpey et al., 2017; Williams et al., 2010). There is also a paucity of research related to the link between hospitals' SES and quality of patient care and safety in Illinois (Call & Miedema, 2018; Jordans et al., 2019). I conducted this study to provide meaningful and complementary insights for improving the culture of patient care quality and safety of health care delivery systems in Illinois.

### **Purpose of the Study**

The purpose of this quantitative study was to examine if patient care quality and safety are related to hospitals' SES among Chicago's acute care hospitals. The study included three variables. The independent variable was hospitals' SES while the dependent variables were patient care quality and patient care safety provided in the acute care hospitals. The SES of acute care hospitals was determined from Medicare's disproportionate share hospital (DSH) designation (Medicare Learning Network [MLN], 2021). According to the Centers for Medicare and Medicaid Services (CMS; 2022), acute

care hospitals in urban areas qualify for Medicare DSH adjustment if their bed capacities are at least 100 and receive more than 30% of their total net inpatient care revenues from public sources for indigent care (MLN, 2021). Based on the formula applied by CMS, two categories of acute care hospitals were identified: high-SES acute care hospitals, which serve high-SES patients, and low-SES acute care hospitals, which serve patients from disproportionately disadvantaged backgrounds. I used hospital readmission rates for select conditions to measure patient care quality while the measure of hospital-acquired infections (HAIs) was used as a proxy measure of patient care safety. Understanding how quality of patient care and patient care safety are associated with hospitals' SES is essential in designing policies for improving health care systems and ensuring vulnerable populations' access to quality care.

### **Research Questions and Hypotheses**

I based the research questions on the categorization of acute care hospitals. I grouped hospitals into two categories: those serving patients of low SES and those serving high-SES patients. The research questions and hypotheses were:

RQ1: Is there a difference in patient care quality between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals?

$H_0$ 1: There is no statistically significant difference in patient care quality between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals.

$H_{a1}$ : There is a statistically significant difference in patient care quality between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals.

RQ2: Is there a difference in patient care safety between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals?

$H_{02}$ : There is no statistically significant difference in patient care safety between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals.

$H_{a2}$ : There is a statistically significant difference in patient care safety between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals.

### **Theoretical Framework**

In this study, I used the Donabedian quality framework (DQF) to explore the relationship between patient care quality and safety with hospitals' SES among Chicago's acute care hospitals. The DQF is used to guide health care workers towards standards of providing and studying patient care quality (Binder et al., 2021). The DQF of care is premised on three interlinked structures that are a prerequisite for the provision of high-quality and safe patient care: structures, processes, and outcomes (LoPorto, 2020). Ayanian and Markel (2016) indicated that the quality of services can improve when health care providers remain neutral and increase their detachment levels. Berwick and Fox (2016) have further suggested that the structure of health care systems affects the processes and outcomes of patient care. High quality of care is anchored on the extent to

which the processes result in desired health outcomes that are informed by professional skills and knowledge.

The DQF was suitable for this study because it espouses evidence-based insights on how health care practices in urban environments can be consistently and sustainably pursued to enhance the delivery of quality and safe health care services (see Wang et al., 2019). Medical systems in urban areas are likely to have better environments and facilities than those in rural and semi urban contexts (Bhatt & Bathija, 2018). Urban areas are also likely to have facilities that require high professional competence and employ medical staff with enlightened morals. Despite the high medical costs in urban settings, patients are likely to access high-quality health care information alongside improved communication. Medical practitioners in urban settings are also associated with improved care toward patients. These patients can experience efficient and well-coordinated care (see Wang et al., 2019). Patients are also likely to report higher levels of safety and better health outcomes than those in the medical systems in rural and low-income areas.

I also used the Andersen behavioral model of health services in this study to determine the extent to which patient care safety and quality can contribute toward long-term use of services and supports (see Travers et al., 2020). The Andersen model can be applied as an economic framework that explores patient needs, enabling environment, and predisposing factors (Hong et al., 2019; Pilar et al., 2020). The model was appropriate for this study because it provided a theoretical lens through which to explore the relationship between SES and patient care quality and safety. The model was originally developed in the 1970s to consider how policies, resources, and demographic

factors are related to health care quality (Hong et al., 2019). In the model, it is suggested that that SES is highly associated with the quality and safety of care as well as that patient-centered factors, such as financial constraints and distance to a health care facility, could affect patients' access to health care. More recent conceptualizations have indicated that personal demographic variables, such as SES, may be related to patient perceptions of the quality and safety of care received at health care facilities (Hong et al., 2019; Pilar et al., 2020). The Andersen model was important for this study because it is used to consider the variables of SES and provided a framework for exploring how systematic policies may impact patients differentially (see Pilar et al., 2020). In using the model, I articulated the link between patients' SES and the quality and safety of health care received.

### **Nature of the Study**

In this study, I used a quantitative approach and a cross-sectional design to investigate if statistically significant differences in patient care quality and safety exist between low-SES and high-SES acute care hospitals in Chicago. Numerical patient data were accessed from the Illinois Department of Public Health (IDPH). I used secondary data for this study to enhance the external validity of the research due to the possibility of accessing a large data set. The independent variable was the SES of acute care hospitals while the dependent variables were patient care quality and patient care safety. The target population for the study comprised acute care hospitals within the state of Illinois. Hospitals that serve a significantly disproportionate number of low-income patients were categorized as Medicare DSH hospitals (see MLN, 2021). These hospitals were

considered as low-SES hospitals because they majorly serve patients from low-SES backgrounds (Hsieh & Bazzoli, 2012). Conversely, patients from stable socioeconomic backgrounds are likely to use non-Medicare DSH hospitals (McMaughan et al., 2020). Such acute care facilities were regarded as high-SES hospitals. The acute care hospitals were categorized as either low-SES or high-SES hospitals based on the defining qualifications for the alternate special exception for DSH adjustment payments (see MLN, 2021). The data on patient care quality and safety was categorized into two groups: Medicare DSH and non-Medicare DSH hospitals. To analyze the data, I used independent samples *t* tests. An independent samples *t* test is conducted to compare the mean values between two unrelated categories (Carlson & Winquist, 2017, p. 316).

### **Literature Search Strategy**

I performed a search for relevant articles, documents, and periodicals in different databases to complete the review of related literature for this study. The databases and search engines used included: Google Scholar, Psych Articles, Science Direct, EBSCO, JSTOR, PubMed, and Educational Resource Information Center. In performing the database search, I used the following keywords related to the topic of this study:

*Donabedian model, Andersen model, urban healthcare and challenges to healthcare systems, patient care quality, and patient care safety.* The search terms were also used in conjunction with each other to generate more specific and relevant search results.

I also reviewed the reference lists of the relevant articles to determine possible additional studies to include. Relevant articles were included to establish the components of the theoretical framework, research problem, and research phenomenon. Most of the

articles and documents included in this review were published between 2017 and 2021 (i.e., at least 85%), except for a few (i.e., less than 15%) seminal articles that were published before 2017.

### **Literature Review Related to Key Variables and Concepts**

Health care systems in urban areas are characterized by more complex systems, causing more health problems in the urban settings than in the rural areas (Rath, 2020). With high urban population growth, the need for equal access to quality health care and fair distribution of health care services is a concern that must be addressed (Rezaee et al., 2021). In this literature review, I explored important aspects of urban health care systems. The subsections in this literature review are focused on (a) the Donabedian framework and health care, (b) the Andersen model of health care utilization, (c) importance of patients' SES in health care, (d) importance of patient care quality and safety, (e) patient care quality and safety in urban areas, and (f) primary challenges for urban health care systems.

#### **Donabedian's Framework and Health Care**

I used the DQF as a guide in exploring the phenomenon of interest, which was the association of hospitals' SES with patient care quality and safety in Illinois. Based on the DQF, structural measures have direct influences on process measures, which, in turn, have a direct influence on the outcome measures of health care (Allen-Duck et al., 2017). The DQF has been used to explain the path of previous research and ground it in theoretical constructs (Casanave & Li, 2015; Cohen & Shang, 2015). According to Allen-Duck et al. (2017), the DQF is ideal for exploring outcomes that intersect with external



variables, including hospitals' SES. The DQF has been used to explore the upholding of safe, quality, and effective medical practices in medical settings (Ayanian & Markel, 2016).

Medical systems in urban areas are likely to report higher medical costs, better communication and information, and caring attitudes from staff alongside emotional support (Wang et al., 2019). Patients in urban settings are also likely to post higher levels of satisfaction and better health outcomes compared to those in medical systems within other contexts. The DQF specifically focuses on evaluating the quality of physician-patient interactions (Allen-Duck et al., 2017). Thus, the model aligned with the current study in which I investigated how medical systems in urbanized areas sustain continuous quality and safety improvements (see Casanave & Li, 2015). The current study employed the outcome measures of the DQF because health care providers within urban contexts often have to deal with effective organization and management of quality improvements. The DQF's process measures provided a lens for understanding how evidence-based practices in health care can consistently and sustainably support the delivery of high-quality and safe patient care.

### **Andersen Model of Health Care Utilization**

The Andersen model has been widely used to explore health service use across different diseases and multiple areas of the health care system (Babitsch et al., 2012). The Andersen model is a framework that is used to explore patient needs, enabling elements, and predisposing factors (Hong et al., 2019; Kabir, 2021; Pengid et al., 2022). Hong et al. (2019) further claims that finances are an enabling factor listed within the model and that

enabling factors are important because they determine the ability of an individual to pay for health care through income or financial assets at their disposal. Third-party economic support through health insurance is also considered as an enabling element (Andersen & Davidson, 2007). The Andersen model was important for this study because I used it to expound on the roles of SES as a variable of this study and it provided a framework for exploring how systematic policies may impact patients in different ways (see Pilar et al., 2020).

### **Importance of SES in Health Care Context**

SES may be translated into several aspects of an individual's living and relationship within a community (Øversveen et al., 2017). In the field of health care, a person's SES is a determinant of health status (Øversveen et al., 2017; Ruiz-Pérez et al., 2021). People from high socioeconomic backgrounds have access to better options of health care services compared to their counterparts from low-SES backgrounds (Øversveen et al., 2017; Ruiz-Pérez et al., 2021).

Researchers have explored the role of SES in health and the quality of care received. Øversveen et al. (2017) focused on social inequality in rethinking the causal relationship between SES and health. The authors claimed that the relationship between SES and the health of a person is not static. Qualitative data must be collected in conjunction with quantitative data that considers SES and health as dynamic variables (Øversveen et al., 2017). However, the authors did not completely validate their findings through real-life settings or did they explore the factors related to patient care quality and safety. In another study, SES and the health status of individuals were explored within the

context of a financial crisis (Ruiz-Pérez et al., 2021). Persons who had less to spend on health services had poor mental health (Ruiz-Pérez et al., 2021). These studies highlighted the role of SES in the health of individuals, which is related to the topic of the current study. These studies, however, were not focused on explicating the interplay of patient care quality and safety in the context of SES, which were the specific variables of interest in the current study.

Socioeconomic inequity has also been explored in the context of access to health care services (Sibeudu et al., 2017; Tumin et al., 2018). According to Donahoe and McGuire (2020), SES is a fundamental driver of health because it features the main resources that are crucial in avoiding risks and lessening the impact of diseases. Families and individuals from high-socioeconomic groups have a high tendency to avail for routine immunization services as compared to those belonging to low-SES populations (Sibeudu et al., 2017). The main barrier to accessing health care services by individuals from low-socioeconomic backgrounds, especially immunization, is the cost factor (Arpey et al., 2017; Donahoe & McGuire, 2020). The high cost of accessing health care can impede individuals from low-SES backgrounds from accessing most acute health care services. In addition to the cost of the health care services, additional expenses, such as the transport cost incurred when availing themselves or their children for vaccination, are a key concern for people from low-SES backgrounds (Sibeudu et al., 2017). However, these findings are not focused on patient care quality and safety in the context of SES.

The impact of a community's socioeconomic inequality on the provision of health care services has also been previously explored by researchers. Tumin et al. (2018) found

that communities or counties with prevalent socioeconomic inequality, compared to people from socioeconomically equal communities or counties, have a wide array of unmet health care needs as measured through income inequality metrics. Nonetheless, Tumin et al. only focused on a small population in a single state, limiting the study's external validity. Including a larger scope and population in the same study would be more beneficial for making valid conclusions about the importance of SES in the context of accessing health care services.

The findings of the different studies that have focused on the role of SES in accessing health care suggest that ability to pay is crucial insofar as accessing health care services is concerned (Donahoe & McGuire, 2020; Øversveen et al., 2017; Ruiz-Pérez et al., 2021; Sibeudu et al., 2017; Tumin et al., 2018). Those individuals with the capacity to pay are more likely to gain access to different health care services. Having a wider gap in SES within a community is a significant predictor of the ease of access to good quality health care services (Sibeudu et al., 2017; Tumin et al., 2018). For those with limited monetary resources, accessing good quality health care remains a significant challenge.

### **Importance of Patient Care Quality and Patient Care Safety**

Patient care quality and patient care safety are two of the most important considerations when assessing the quality of health care services being provided (World Health Organization, 2019). In systematic reviews that explored the different factors related to quality and safety of patient care, researchers found that the burnout of health care professionals has a significant impact on patient care safety (Garcia et al., 2019; Han et al., 2016; Hewner et al., 2016; Jordans et al., 2019; Lawati et al., 2018). A high burnout

level among nurses and physicians is common and is associated with external factors, including ineffective interpersonal relationships and high workload. To enhance patient care safety, health care facilities must have organized workflows that generate autonomy for health care professionals (Garcia et al., 2019). In another systematic review, Lawati et al. (2018) highlighted the importance of conducting an assessment of a culture of safety in primary care, suggesting that the approach is helpful in understanding the safety-related perceptions of health care providers. Garcia et al. (2019) and Lawati et al. (2018) have established the importance of measures of patient care safety in the provision of high-quality health care services; however, their studies were not complete in exploring patient care safety within the context of SES of patients.

Patient care has been highlighted as an important aspect to the health of individuals, especially immigrants (Wylie et al., 2019). Similar to the studies of Lawati et al. (2018) and Garcia et al. (2019), Wylie et al. (2019) reported the importance of patient care in the field of health care services. The implication of SES to patient care has not been fully established in these studies. Wylie et al.'s study was more focused on quality of patient care for ensuring the good mental health of immigrants rather than the factors that influence the patient care of individuals.

Further research by Stockwell et al. (2019) explored contributing factors to the disparities in in-patient safety for children in hospitals with a focus on the cases of adverse effects among patients. They found extant disparities in the quality and safety of health care between hospitalized children from the racial majority (i.e., non-Latino,

White) and racial minority. Disparity in health care experiences among children patients has also been associated with their SES (Stockwell et al., 2019; Wylie et al., 2019).

This indicates that patient care quality and safety are important measures of the quality of health care services. Researchers have established different predictors of patient care safety and quality of care. However, studies on the quality and safety of patient care did not include exploration of patient care safety in relation to the SES of patients in urban areas.

### **Primary Challenges for Urban Health Care Systems**

This study was built on the findings of previous research that investigated the role of quality and safety in the improvement of health care systems. Different researchers have explored the urban health care system (e.g., Adams, 2017; Amoah et al., 2018; Du et al., 2020; Liu et al., 2018; Unruh & Hofler, 2016; Zhang et al., 2017). Amoah et al. (2018) explored the nuances related to accessing health care for urban and rural populations. Their study focused on understanding the hindrances to accessing health care, finding that rural dwellers are often at a disadvantage compared to urban dwellers. Amoah et al. indicated that urban residents have the capacity to easily access health care services while disadvantaged populations, such as those in rural areas, are continually deprived of easy access to health care services. Zhang et al. (2017) also explored health care access issues, with a primary focus on urban and rural areas in a developing country. Through a longitudinal study, the authors found that older adults in rural areas have higher cases of reported inadequacies in access to health care when compared to older

adults in urban areas. Zhang et al.'s findings were consistent with Amoah et al.'s as both reported that rural areas have poorer access to health care compared to urban areas.

Urban areas are characterized by more job opportunities, better education, and more choices of entertainment (Adams, 2017). However, these characteristics of urban areas lead to a higher density of the population, and as a result, access to health care services may be challenging for patients in such settlements. This finding contradicts the results of Amoah et al. (2018), who reported that people residing in rural areas have limited access to high quality and safe patient care. The advantages of more available jobs and economic activities could mean poor health outcomes due to resource constraints that overwhelm the urban health care system (Adams, 2017; Amoah et al., 2018).

One of the primary challenges in accessing health care among low-income communities is the means of transportation (Du et al., 2020). Older adults in suburban areas tend to rely on buses and walking when seeking medical treatment. For longer distances, the financial status of the individual manifests in their chosen mode of travelling, wherein people from high-income families can use private cars rather than using public means to get to the hospital (Du et al., 2020). Overall, Du et al.'s (2020) findings revealed the prevalence of significant differences between accessing health care in rural and urban areas. Du et al.'s study included patient populations outside the United States, which reduced its external validity. In a related study, Liu et al. (2018) found that the choices of health care facility in rural and urban areas in China influenced the quality and safety of health care received by patients. In rural areas, patients choose township

health care facilities by default, with the possibility of being transferred to higher-level facilities when necessary. Patients in urban areas chose higher-level facilities by default whenever seeking medical treatment. Both Du et al. and Liu et al. highlighted the differences in the decisions made by patients in rural and urban settings with regard to health care access; however, the unique challenges to urban area health care services were not explored completely in the two studies since none of them looked at differences in patient care quality and safety between urban and rural health care facilities.

The primary challenges for most health care systems in urban regions include management of quality and safety improvements and maintenance of effective organizations (Unruh & Hofler, 2016). Most acute care hospitals have significant gaps in quality indicators (Unruh & Hofler, 2016). Unruh and Hofler (2016) assessed the predictors of gaps between the best possible and actual quality scores. For children, one of the main sources of health care services is their respective public schools; however, these schools and their health service personnel are often ill equipped to provide quality health care, especially in low-income, urban communities (Kuriyan et al., 2021). Additionally, Unruh and Hofler acknowledged that the direction of association with gaps was not homogenous across outcomes; however, their study was not specific to hospitals located in an urban locality. The current study built on Unruh and Hofler's findings to investigate the interrelationship of patient care quality and safety with the SES of acute care hospitals.



## **Patient Care Quality and Safety in Urban Areas**

Researchers have identified several gaps in empirical research regarding the quality and safety of patient care in urban areas (Garcia et al., 2019; Lawati et al., 2018; Han et al., 2016; Hewner et al., 2016; Jordans et al., 2019). Generally, it is assumed that urban populations are financially stable and can afford health care services; however, an increase in urban population leads to a rise in communicable and non-communicable diseases (Fausto et al., 2017). The urban population is increasingly prone to diseases due to unsanitary living conditions. The quality of air in urban settings is retrogressively poor due to disproportionate pollution while more than 40% of the urban residents do not have access safe and clean drinking water (World Health Organization, 2021). Quality and safety are constantly evolving due to demographic factors, such as aging populations, technological advancements, developments in medical treatments, and shifting preferences of core stakeholders (Han et al., 2016; Hewner et al., 2016; Jordans et al., 2019; Unruh & Hofler, 2016).

Empirical studies have revealed extant inequities in the provision of quality health care for low socioeconomic groups in urban and suburban settings (Scholaske et al., 2018; Van Hecke & Heinen, 2017; Yaya et al., 2017). Previous studies have illustrated that SES, gender, and race influence access to quality and safe health care (Galama & Van Kippersluis, 2019; Garchitorena & Sokolow, 2017; Kabisch, 2019). In urban and suburban settings, resources and infrastructures are adequate; however, a portion of the population suffer from apparent lack of quality care due to the impact of their socioeconomic, gender, and ethical status (Alhassan et al., 2015; Etchin et al., 2019).

Furthermore, health care costs (for example, co-pay or self-pay insurance) are increasingly becoming expensive for ordinary persons (Allen-Duck et al., 2017). Poverty and health are intrinsically connected; moreover, low health quality is often linked to low SES. People from low-SES backgrounds often find themselves in the state of needing high-quality health care compared to those from more affluent background (Han et al., 2016; Hewner et al., 2016; Jordans et al., 2019). In this study, the focus of the exploration will be the gap in research about the relationship of patient care quality and patient care safety to the SES of patients in the city of Chicago, Illinois.

### **Operational Definitions**

Defining terminologies used in a study is essential in enhancing intelligibility of the study to its audience. This subsection presents the operational terms used throughout this study and supported by literature:

*Acute Care Hospital:* The Centers for Medicare and Medicaid (n.d) defined acute care hospital as a “hospital that provides inpatient medical care and other related services for surgery, acute medical conditions, or injuries,” especially for short-term conditions that may require emergency attention (p. 1). They include health care facilities designed to improve health care outcomes through active diagnosis, treatment, and rehabilitation of sick persons within a short duration (Huber et al., 2020).

*Disproportionate Share Hospitals (DSHs):* DSHs serve patients from significantly disadvantaged backgrounds, which make them eligible for Medicare’s DSH payment adjustments to compensate for the cost of providing care to uninsured patients (MLN, 2021).

*High SES Hospitals:* High SES hospitals refer to those acute care hospitals that are not eligible for Medicare DSH revenue adjustment and serve patients from high socioeconomic backgrounds.

*Hospitals:* Hospitals are institutions that are primarily designed, staffed, and equipped to promote, maintain, and restore the health of patients through proper diagnosis, treatment, and rehabilitation (Abubakar & Kathuria, 2020). The hospitals of interest for this study were acute care hospitals in the city of Chicago.

*Hospitals' Socioeconomic Status (SES):* Hospitals' SES was the independent variable for this study and was determined from Medicare's DSH categorization. Hospitals that serve a disproportionate number of patients from low socioeconomic backgrounds are eligible for Medicare DSH payment adjustment for indigent care (MLN, 2021). Patients from low socioeconomic backgrounds are characterized by limited education, income, and financial security. The CMS designation of hospitals as either Medicare DSH or non-Medicare DSH hospitals was used to categorize acute care hospitals into low SES and high SES hospitals respectively. A Medicare DSH hospital receives more than 30% of its net inpatient revenue from state and local government sources. Conversely, non-Medicare DSH hospitals are not eligible for DSH adjustments as they attend to patients who are economically well-off. In that vein, non-Medicare DSH hospitals were considered high SES hospitals.

*Hospital-Acquired Infections (HAIs):* HAIs are preventable illnesses that occur within 48 hours of patient admission or 30 days after the patient has been admitted and put on continued care management at the nearest health care facility (Haque et al, 2018).

HAI is an infection developed by a patient in the course of receiving treatment and can lead to the deterioration of health outcomes. It is thus an important proxy of patient care safety.

*Low SES Hospitals:* In the operationalization of this study, low SES hospitals are those hospitals eligible for Medicare DSH revenue adjustment by the fact of serving patients from disproportionately disadvantaged backgrounds and receive more than 30% of the total inpatient revenue for indigent care from the state.

*Patient Care Quality:* Patient care quality is the assessment and provision of effective and safe care that is reflected in a culture of excellence, resulting in the attainment of optimal or desired health outcomes (Gqaleni et al., 2020; Puni & Hilton, 2020). Patient care quality was used to conceptualize one of the dependent variables related to the research questions of this research. The Institute of Medicine (IOM) defined quality of health care in the perspective of norms, practices, and standards that bestow desirable health outcomes in consistence with nursing and professional standards (Mitchell, 2008). This definition connects quality of health care to several indicators that demonstrate health-promoting behaviors, achievement of high standards of self-care, and health-related quality of life. Thus, the current study focused on the rate of 30-days readmission rates in the acute care hospitals to determine the quality of health care provided in those specific healthcare facilities. The readmission rates give insight into the quality of hospital's input in preventing post-treatment complications and educating patients on how to self-manage their conditions after being discharged.

*Patient Care Safety:* Patient care safety refers to the prevention of harm, errors, and adverse events to patients receiving healthcare (Cuomo et al., 2021). In this study, patient care safety was one of the dependent variables used in answering the research questions. The IOM has defined it as a system of care delivery that (a) ensures prevention of errors, (b) learns from its errors, and (c) is anchored on the culture of safety that comprises healthcare professionals, providers, and patients (Mitchell, 2008). The practices that espouse patient care safety are those that reduce the incidence of harm to patients within the context of medical care provision across medical conditions and diagnoses. In this study, patient care safety was determined using HAIs. HAIs result in unanticipated health outcomes that often add unnecessary burden to the patient, the health care facility, and relatives of the patient (Haque et al., 2018). The IOM has identified HAIs as a crucial indicator for the safety of patient care and recommended for mandatory reporting of adverse health events by acute care facilities, which means that public scrutiny of health care facilities can help in preventing the incidence of such infections (Collins, 2008). As HAIs are generally preventable, it was treated as a major metric of concern in the measurement of safety of care at any given acute care hospital.

*Patients' Readmission Rates:* This term refers to the percentage of patients who return to the health care facility within 30 days of discharge from the hospital (Ferro et al., 2019). A reduction in inpatient readmission rates in a hospital is an indication of system wide implementation of hospital initiatives targeted at improving the quality of care.

*Urban Area:* Urban area refers to at least one aggregate of metropolitan counties in a state (Kassens & van der Meulen Rodgers, 2019).

### **Assumptions**

Study assumptions are the researcher's predispositions that are deemed factual without validation or confirmation (Theofanidis & Fountouki, 2018). A key assumption of this study was the use of only one factor to represent each of the two dependent variables. One factor (readmission rates) was used to represent the patient care quality while HAIs were used to measure patient care safety. The use of one indicator for each of the variables was based on the assumption that one factor can act as a proxy for all of quality or safety indicators. The other assumption was that the secondary data that were used for this study are accurate and reflected the variables of interest. I also used cross-sectional data accessed from public health databases. Using publicly available data is both economical and time saving (Wickham, 2019). However, I did not have control over the certainty and validity of data collection measures that were employed. The other assumption I made in this study was that the Coronavirus (COVID-19) pandemic had minimal impact on the accuracy of health care data. By the beginning of June 2022, already the world had lost more than 6 million lives with over 500,000,000 infections globally as a result of the COVID-19 health crisis (World Health Organization, 2022). The impact of the COVID-19 pandemic, especially on the utilization of health care services, could affect the accuracy of data due to profound health care inequities that were exacerbated by the pandemic (Moynihan et al., 2021; Zhang et al., 2020). To reduce the impact of the COVID-19 pandemic on the accuracy of the reported data, binary

logistic regression was performed to ascertain the accuracy of the model in determining the association. I also excluded cases of outliers (missing data or where the values were nil) based on the assumption that they do not impact data accuracy.

### **Scope and Delimitations**

Delimitations are boundaries that researchers set to make the research feasible. The first delimitation of this study was the focus of the phenomenon, which was aligned with the topic and problem of the study: patient care safety and patient care quality of acute care hospitals in urban areas. The phenomenon is based on the problem of the study: it is unknown how the quality of care and patient care safety are related to the SES of Chicago's acute care hospitals. The study did not include or explore other phenomena. Secondary data were used to collect adequate information required to address the research questions. New or primary data were not collected for the study.

### **Limitations**

The limitations of this study included elements that possibly impacted the results of data collection and analysis. They included the possibility that the proposed data sources did not avail sufficient information to address the research questions. In particular, a large sample size could have provided a more meaningful data to enhance the understanding of how SES, quality of care, and patient care safety are related. Notwithstanding, I made significant effort to ensure that the collected data were appropriate for addressing the research questions. The second limitation was the possibility of the researcher's bias impacting the findings of the study. Regarding this concern, a standardized method that precluded researcher's bias error was considered for

data collection and analysis. Each step of data collection was followed carefully to ensure that these limitations did not impact data analysis and the ultimate findings of the study. The third limitation of this study was the use of a cross-sectional research design. While a longitudinal design could have provided an elaborate understanding of the relationship between the variables in this study, the cross-sectional design was preferred due to cost factor and time. Limited resources did not allow me to conduct a longitudinal study. Nonetheless, this study will pitch opportunities for future researchers who may wish to explore this topic using longitudinal design and to study whether there is any cause and effect relationship between the variables of interest. The use of only one factor to represent either patient care safety or patient care quality could have also posed limitations to this study. However, it was assumed that one indicator can be used as a proxy for all other factors that determine patient care quality and patient care safety.

### **Significance of the Study**

Several studies have illustrated a link between SES and quality of health care and safety of patient care (Galama & Van Kippersluis, 2019; Garchitorena & Sokolow, 2017; Kabisch, 2019). However, there is a dearth of research assessing possible differences in patient care quality and safety between low SES and high-SES acute care hospitals in Chicago. The exploration of the status of patient care safety and patient care quality between Medicare DSH and non-Medicare DSH hospitals can provide useful information for health care stakeholders in Chicago. Professionals and health care workers, such as nurses and clinicians, may benefit from positive social change and understand the link between hospitals' SES and the quality and safety of health care. Based on their SES,



patients may know what to expect in terms of patient care safety and quality of health care when they visit acute care hospitals. Policy makers can also use this information to justify the appropriateness of the current health care systems to meet the need of current and future populations.

Reviewing the relationship between SES and access to health care that is characterized by high quality and safety can also provide important information for the management of age-related chronic diseases as there is a rapid increase in aging populations in urban areas (McMaughan et al., 2020). Cases of chronic and acute conditions are expected to increase due to the expanding population of Illinois' urban areas (Eathington, 2010). The aging population and increasing cases of patients with chronic disease need regular care regardless of their SES. The results of this study may be helpful in designing health programs that cater for patients from diverse socioeconomic backgrounds. Additionally, the findings of this study might help address a crucial gap in literature regarding the relationship between quality and safety of health care with hospital's SES.

### **Summary and Conclusion**

This study sought to understand the relationship between patient care quality and patient care safety with socioeconomic status of acute care hospitals in Chicago's urban areas. The specific problem of this study is that it is unknown how patient care quality and patient care safety in Chicago's acute care hospitals are related to hospital's SES. This is consistent with the purpose of the study, which is to examine if patient care quality and safety are related to hospitals' SES in Chicago's acute care hospitals. The

study included three variables: hospitals' socioeconomic status (independent variable) patient care quality (dependent variable) and patient care safety (dependent variable). SES of the hospitals was categorized into two groups based on the qualifying criteria for consideration as DSHs. The DQF was used to gain insights into the quality of patient care in hospitals. Additionally, the Andersen model was used to provide a theoretical lens for exploring the relationship between quality and safety of patient care and SES.

Several studies have examined the association between SES and quality and safety of care provided in acute care hospitals. However, there is a dearth of evidence on the association between patient care quality and patient care safety with hospitals' SES. In Section 2, I will provide the study's outline for the possible relationship between patient care quality and patient care safety with hospitals' SES in Chicago's acute care hospitals. The section will cover the research design and rationale, methodology, sample selection and procedure, instruments and data collection procedures, threats to validity, data analysis, and limitations of the study.

## Section 2: Research Design and Data Collection

The purpose of this quantitative study was to examine if patient care quality and safety are related to hospitals' SES in Chicago's acute care hospitals. This section includes a detailed discussion of the selected research design and a justification for using a quantitative methodology for the study. This discussion also includes information about the target population, sampling procedures, data collection procedures, and operationalization of the constructs. After the methodology subsection, I identify potential threats to the internal and external validity of the study's results and outline the ethical procedures and standards that were followed throughout the project. The section ends with a description of the limitations and a summary.

### **Research Design and Rationale**

In this study, I used a quantitative methodology to examine the relationship between patient care safety and quality and the SES of acute care hospitals in Chicago, Illinois. Hospitals' SES was the independent variable, while patient care quality and patient care safety were the dependent variables. Secondary data for the independent variable were obtained from the Illinois Department of Healthcare and Family Services (HFS) database. The data were gathered with reference to the guideline for hospitals' qualification for DSH payment adjustments as outlined by CMS.

Hospital data were grouped into two categories: high-SES and low-SES hospitals. A hospital qualifies for Medicare DSH payment adjustment using the alternate special exception if it (a) is found in an urban area, (b) has 100 or more beds, and (c) can prove that revenue adjustments from state and local government sources surpass 30% of their

total net inpatient revenues for providing health care to uninsured persons (CMS, 2022; MLN, 2021; Popescu et al., 2019). Patients from low socioeconomic backgrounds often have low levels of education, struggle with income needs, and lack financial security (Arpey et al., 2017). Any hospital that receives more than 30% of their total inpatient revenue from state or local governments' sources serves a disproportionate number of low-income patients. In this study, I referred to such hospitals to as low-SES hospitals and referred to those that receive less than 30% of their inpatient revenues from state and local government resources as high-SES hospitals. The Illinois Department of HFS (2022) database provides a list of facilities eligible for DSH reimbursement under the hospitals' reimbursement notifications. I used the determinations for DSH payment, Medicaid percentage adjustment (MPA), and Medicaid high volume adjustment (MHVA) to identify the 20 acute care hospitals in Chicago, Illinois that were included in this study. The 2019 determination used as the focus of this study was for data finalized for the rate year of 2019.

I did not ignore the effects of the COVID-19 pandemic on the data and health care workload. The COVID-19 pandemic disproportionately affected communities from low socioeconomic backgrounds because health care services in low-SES hospitals were overstretched beyond capacity (World Health Organization, 2021). The COVID-19 pandemic disrupted service delivery in both low- and high-SES hospitals due to the increase in cases that were not reported or could not be reported due to insufficient health care services. However, the most affected communities by the disruption resulting from the health crisis during the COVID-19 pandemic were those relying on health care

services from low-SES hospitals (Tuczyńska et al., 2022; Zhang et al., 2020). As such, I outlined a raft of measures for rigorous analysis of the COVID-19 data to reduce errors in reporting (Stoto et al., 2022). For instance, the secondary data utilized in this study were collected before the outbreak of the COVID-19 pandemic. This study was also guided by the scope of the study, which was to find out whether there is a significant difference in patient care quality and safety between low-SES and high-SES acute care hospitals in Illinois. During data analysis, I made attempts to reduce the effect of the COVID-19 case load on the accuracy of the data by simulating differences in the data reported before and after the pandemic. The outliers were considered as exceptions and excluded during data analysis. Also, I noted assumptions and delimitations of the study to avoid diverging from the study's purpose.

I obtained data for the dependent variables from the IDPH database. The IDPH database provides a publicly accessible database, the Illinois Hospital Report Card and the Consumer Guide to Health Care. Links provided by the IDPH were used to access additional information on quality and safety standards at different hospitals in Illinois (CMS, 2022). I then compared quality and safety indicators across acute care hospitals. The categorization of hospitals into Medicare DSH and non-Medicare DSH hospitals was first done to identify the 20 hospitals (i.e., 10 non-Medicare DSH and 10 Medicare DSH hospitals) that satisfied the inclusion criteria set by CMS on eligibility for DSH payments (CMS, 2022; Illinois Department of HFS, 2022).

I derived data on patient care safety and quality from the IDPH's Division of patient safety and quality. The IDPH's Division of Patient Safety and Quality ensures

transparency in the provision of health care and oversees the development and implementation of programs to collate health care provider data for the purposes of reviewing and improving the quality and value of health care provided to the residents of Chicago, Illinois. Specific factors were used as proxies for all other indicators that contribute to the quality and safety of care. The two proxy factors of dependent variables used in this study were HAIs and patients' readmission rates.

I measured quality of care using hospital readmission rates. According to Mitchell (2008), quality care is effective and timely, thus suggesting that high-quality care can promote reduction in patients' readmission rates. Patients' readmission rates have also been shown to determine the quality of care received from acute care hospitals (Hu et al., 2014). I, therefore, assumed that hospitals that provided a high quality of health care provided better health care services and had few cases of patient readmissions for the select conditions.

I used HAIs as a proxy of patient care safety. HAIs are infections acquired by patients in the course of treatment at an acute hospital (IDPH, 2021). HAIs are preventable illnesses that occur within 48 hours of patient admission or 30 days after the patient has been admitted and put on continued care management at nearest health care facility (Haque et al., 2018). They include the type of infections that develop during the course of health care treatment and can cause significant deterioration in patients' health outcomes (Collins, 2008). HAIs are a major concern in patient care safety because they can result in increased morbidity, mortality, costs, and extended hospital stays for patients (Haque et al., 2018, p. 2327).

I compared the two variables of patient care quality and safety from both categories of hospitals. Since there were two categories of data being sought per each group of hospitals, averages were used to determine the scores for each factor. The data used for analysis was from October 2018 through September 2019 for consistency with the hospitals' SES data timeline. Each hospital had an average quality score. Having one score of performance in terms of quality and safety of care allowed for comparison of hospital performance between high-SES hospitals and low-SES hospitals. This gave two scores for each variable: (a) patient care quality score in high-SES hospitals and patient care quality in low-SES hospitals and (b) patient care safety in high-SES hospitals and patient care safety in low-SES hospitals. I used a two-sample  $t$  test to test whether the two averages (i.e., scores) were equal.

I used an independent sample  $t$  test to compare the mean values of health care quality and safety between Medicare DSH and non-Medicare DSH hospitals. An independent samples  $t$  test is used to compare means between two groups that are not related (Carlson & Winquist, 2017; Gilchrist & Samuels, 2014). To test the hypotheses posed in the study, I conducted two independent  $t$ -test analyses. Regarding the first hypothesis, the mean value of patient care quality between low-SES hospitals and high-SES hospitals were compared to determine if a significant difference existed between them. For the second hypothesis, patient care safety was compared between low-SES and high-SES hospitals in Chicago, Illinois to determine if there was a statistically significant difference between them.

Quantitative data are desired for cases where the focus is on numerical measurement of the relationship between variables (Eyisi, 2016). A qualitative approach was not appropriate for this study because the objective of this study was not to explore the details of how or why questions regarding the participants' experiences of patient care quality and safety. Qualitative methodology is used when research questions require opinions of the respondents of interest (Yin, 2017). In qualitative studies, the objective is to study the nuances and intricacies of a phenomenon and to obtain narrative descriptions of the participants' experiences and perceptions (Lund, 2021). Data for qualitative designs are collected through interviews, observations, focus groups, questionnaires, and from similar methods that focus on descriptive analysis. Qualitative data can be in many forms, like in texts, images, videos, and audio. The studies of qualitative nature focus on deriving meaning from the description of the respondents. Conversely, the quantitative methodology is designed for studies in which the goal is to examine the pattern of variable interrelationships, as was the case in this study. The two research questions for this study focused on examining the relationship between numerically measured variables of patient care quality and safety. This goal informed the selection of the quantitative design for this study.

There are three quantitative research designs that are generally used in research: experimental, quasi-experimental, and descriptive (Rogers & Revesz, 2020). An experimental research design was not suitable for the current study because I intended to quantitatively investigate the relationship between variables without determining causation or manipulating one of the variables in the study. Moreover, secondary data



were used in the study. Random assignment or use of an intervention or treatment was not possible, and non-experimental study types, including descriptive designs, study the sample in existing environments or circumstances without introducing interventions or adjusting study conditions (Rogers & Revesz, 2020). The experimental research designs also control extraneous variables, which was not the objective of this study. Descriptive designs are used to describe and compare variables, while the experimental and quasi-experimental designs are employed to predict the group's scores and examine the differences between them (Laerd, 2021). These designs could not be used to fill the gap in the literature that called for exploration of a relationship between patient care quality, patient care safety, and SES. For this reason, the differences between the two categories of acute care hospitals were investigated without the need to manipulate any of the variables.

### **Methodology**

In this subsection, I provide details pertaining to the target population, sampling procedures, and data analysis protocol that were used in the study.

#### **Sample Selection**

The selected sample comprised acute care hospitals in Illinois. I identified 20 acute care hospitals (i.e., 10 representing high-SES hospitals and 10 representing low-SES hospitals) in Chicago, Illinois from the data accessed from the Illinois Department of HFS. Because I used a non-probability technique to identify the study's sample, convenience sampling was employed. Convenience sampling allows the researcher to subjectively identify the right sample to include in their study based on their own

judgment and understanding of the research questions (Stratton, 2021). Because a nonprobability technique was used, a power analysis was not necessary, and the chosen sample of 10 hospitals per category was used in the analysis. I selected facilities from the Illinois Department of HFS database based on their eligibility for Medicaid's DSH adjustment. Acute care hospitals that met the minimum requirements to be considered DSHs were regarded as low-SES hospitals, while those that did not meet the requirements were considered as high-SES hospitals. Having an equal number of both high-SES and low-SES hospitals was aligned with the study's objectives and increased the probability of identifying differences between the two categories of hospitals.

The hospitals used in this study were located within 50 miles of the ZIP code 62763. Data for patient care safety and quality were for the rate year 2019 (i.e., October 1, 2018 through September 30, 2019) in alignment with the hospital DSH reimbursement data as derived from the Illinois Department of HFS (2022) database (Illinois Department of HFS, 2022). As stated before, I noted the assumptions and delimitations of the study to avoid diverging from the purpose and topic of research. The data collected by the IDPH are accessible to the general public, and were, therefore, assumed to be free of errors. IDPH has provided a compendium of health care facilities in Illinois and their Medicaid reimbursement data with detailed explanations on the eligibility of each facility for DSH's payments (Illinois Department of HFS, 2020). The data provide aggregated measures of Medicaid inpatient utilization rates, total Medicaid inpatient days, and the total hospital inpatient days, which were used to determine the eligibility of acute care hospital for DSH, MHVA, and MPA.

### **Sampling Procedure**

Sampling entails using a representative set of the population to find an estimate of the characteristics for the whole population (Singh & Masuku, 2014). For a large population, sampling is both efficient and saves on the time necessary for conducting research. Units of study can either be randomly or conveniently sampled; however, the sampling procedure must take into consideration the cost of doing the data collection as well as the reliability of the data for drawing inferences about the population of the sample (Singh & Masuku, 2014). A sample allows for a detailed and accurate analysis of the data (Taherdoost, 2016). In this study, I used convenience sampling to identify the 20 acute care hospital participants within Illinois: 10 hospitals that predominantly serve high-SES patients and 10 hospitals that mainly serve low-SES patients. An equal number of low-SES and high-SES hospitals were included to increase the probability of identifying actual differences between hospital categories.

### **Operationalization and Instrumentation**

The alternate exception method permits eligible hospitals to receive up to 30% of net inpatient revenue from CMS as an adjustment for the cost of indigent care (MLN, 2021). Certain hospitals serve a disproportionately high number of low-income patients, and such hospitals are often located in urban areas, have at least 100 beds, and more than 30% of their net inpatient revenue is funded by state and local government sources for indigent care (MLN, 2021). The Illinois Department of HFS database provides a data set on hospitals' reimbursement and Medicare adjustment for the year 2020. Using the DSH

designation of hospitals by CMS, I identified 10 Medicare DSH and 10 non-Medicare DSH hospitals from the data set to use as participants in this study.

For each of the 20 hospitals, quality and safety data was taken from IDPH, through its link to safety and quality of patient care (CMS, 2022). The Illinois Hospital Report Card and Consumer Guide to Health Care provides information on quality and safety of patient care for various hospitals in Illinois (CMS, 2021). The quality of patient care was determined using readmission rates. Patient care safety statistics was provided by the rate of HAIs observed in the identified acute care hospitals. Average scores of patient care quality and patient care safety in low SES and high SES hospitals were determined and compared using the independent sample *t* test.

### **Data Analysis Plan**

I imported the data gathered in this study in SPSS v26.0. The data was cleaned to affirm the accuracy of the variables and indicators as reported in it. Descriptive statistics such as the mean, standard deviation, and range values were used to describe the variables of the study. To test the hypotheses posed in the study, two independent samples *t* tests analyses were conducted. For the first hypothesis, patient care quality was compared between low SES and high SES acute care hospitals to determine if significant difference existed between them. In the second hypothesis, patient care safety between low SES hospitals and high SES hospitals was compared to determine if a statistically significant difference existed. The alpha level,  $p = 0.05$ , was used for the two analyses. A *p* value lower than .05 implied that null hypothesis was rejected and upheld existence of differences in patient care quality and safety of care between low SES and high SES

acute care hospitals. Conversely, the null hypothesis was not rejected when the  $p$  value exceeded .05 as this implied that there was no statistically significant association between: (a) hospitals' SES and patient care quality, and (b) hospitals' SES and patient care safety.

### **Threats to Validity**

External validity refers to the generalizability of the results while internal validity refers to the extent to which what was done in the study produced the expected results and that the results were not influenced by other factors (Price et al., 2017). In this subsection, I discuss threats to the external and internal validity of the study.

Selection bias has one of the most profound effects on a study's external validity since the way in which samples were chosen influence how generalizable the findings are from the samples to the rest of the population (Liu et al., 2019). In quantitative research, the sample taken should ideally be representative of the larger population to maximize the generalizability of the findings. Liu et al. (2019) opined that random (probability) sampling can be used to reduce the presence of selection bias since all the samples are drawn at random. In other words, because each sample is equally as likely to be chosen, the results are more likely to be more generalizable to the rest of the population (and potentially to other populations) than they would have been had the samples been chosen purposefully or for convenience. When the sampling strategy does not result in a representative sample of participants, as can be the case when purposive sampling is used, it is important to consider how this might influence the generalizability of the results. It is important to note that the study's findings are only generalizable to the target

population, and that the specific characteristics that define the target population make it difficult to apply these results to other groups.

Internal validity refers to the extent to which the research design supports the conclusions made (Price et al., 2017). Non experimental designs, like the one used in this study, typically have lower validity than other quantitative research designs because the variables are not manipulated or controlled (see Price et al., 2017). This means that it is more likely that an unmeasured variable, called a confounding variable, influenced the study's results. An example of a confounding variable in the context of this study would be the influence of provider's age and experience on patient care quality and safety. Other potential threats to the internal validity of the study include changes in instrumentation, participant selection, maturation, and the administration of multiple tests (Rahman, 2020). The use of secondary data sourced from existing reports, instead of primary data collected during interviews or from surveys, increased this study's internal validity. The data were not influenced by patients' perceptions of the study, the number of administered tests, or the data collection methods used.

### **Ethical Procedures**

Ethical considerations constitute a key component of the research process and were considered throughout the design and implementation of this study (Liu et al., 2019). Getting approval from the university's Institutional Review Board was the first step taken to address any ethical concerns that could have risen from this study. Thus, I submitted my Institutional Review Board request and received the approval number 08-30-22-0745003.

Issues such as confidentiality and anonymity were continuously renegotiated. With regard to that, I collected secondary from the IDPH concerning the quality of patient care and patient care safety and associated SES. The data considered in the study did not include identifiable information, while all the data gathered for the study was accessible only to the researcher. Furthermore, the data was only used for the purpose of this study. An informed consent form was also unnecessary because no primary data were collected. All the collected data were locked and stored in file cabinets and password protected computer files for three years; thereafter, all information related to the study will be destroyed and permanently deleted.

### **Summary**

In this section, I presented the research employed in the study and discussed the procedures for data analysis and concerns relating to the study's validity and ethical procedures. To examine potential relationships between variables, I conducted independent samples  $t$  test analysis. This statistical test is appropriate for this study because it is useful in determining if any significant differences exist in the mean values of any two given groups of data. Potential validity threats included selection bias and confounding variables. I did follow all ethical procedures as required by the university's IRB.

In Section 3, I present the outcomes of data collection, descriptive statistics, independent samples  $t$  test, and logistic regression model. I used the logistic regression model to determine the strength of association between independent variable and the dependent variables.

### Section 3: Presentation of the Results and Findings

#### **Introduction**

The purpose of this quantitative study was to examine if patient care quality and safety are related to hospitals' SES among Chicago's acute care hospitals. The study involved three variables: The independent variable was hospitals' SES, while the dependent variables were patient care quality and safety provided by the acute care hospitals. I determined the SES of acute care hospitals using the Medicare DSH designation whereby low-SES hospitals are those eligible for Medicare DSH payment adjustments while high-SES hospitals do not qualify for DSH payments under the formula applied by the CMS. I performed statistical analysis of the data to provide important information to help in designing models that enhance the provision of safe and quality patient care for diverse urban populations in Illinois. The results may also inform positive social change in acute care hospitals in Chicago by articulating how the variables of the study relate to inform patient care quality and safety.

In this section, I provide the time frame for data collection, the results of the analysis, and an interpretation of the findings. A discussion of the study's limitations, my recommendations for future research, an explanation of the implications for positive social change, and a conclusion follow. This study was guided by the following two research questions:

RQ1: Is there a difference in patient care quality between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals?



RQ2: Is there a difference in patient care safety between hospitals of low SES and hospitals of high SES among Chicago's acute care hospitals?

### **Data Collection**

I obtained the secondary data used to conduct this study from the IDPH. The sample used in the study comprised 20 acute care hospitals in Chicago, Illinois (i.e., 10 representing high-SES hospitals and 10 representing low-SES hospitals) and were accessed through the Illinois Department of HFS database. The Illinois Department of HFS database provides the eligibility status of each acute care hospital in Illinois for Medicaid's DSH payments and processes the list of hospitals eligible for DSH, MPA, and MHVA every year. The data used for this study were for the rate year of 2019 (i.e., October 2018 through September 2019).

Patient care safety and patient care quality data were derived from the IDPH's Division of patient safety and quality. As outlined in Section 2 of this study, I analyzed patient care safety and quality data using proxy indicators. Patient care safety was determined using HAIs, while patient care quality was determined using hospital readmission rates. The data from the IDPH's Division of patient safety and quality indicated the readmission rates for each hospital for three conditions: pneumonia, heart failure, and heart attack. The average value of the three measures was computed to have one value that represented the hospital's readmission rate. Where values were indicated as not applicable, I assumed that the indicated measures represented the average hospital's readmission rate.

Hospitals reported different diseases associated with HAIs. I closely analyzed the data for HAIs and removed conditions with missing values or whose values were indicated as not applicable. This then left the data with two conditions associated with HAIs: clostridium difficile infections and central-line associated bloodstream infections. I compared the observed values of the two conditions across the 20 acute care hospitals and found that the central-line associated bloodstream infections data were not statistically significant in the study because most hospitals recorded zero observed events (see Table 1). Although the numerical data presented in Table 1 are accurate, the names of the study sites are pseudonyms in tandem with the university's participant protection policy. The clostridium difficile infections data were assumed to represent the measure of HAIs across all acute care hospitals used in the study.

**Table 1**

*Measure of HAIs at Each Acute Care Hospital*

Hospitals	CDI	CLABSI
St. Luke's Hospital	42	1
McLurie ABC Hospital	55	5
XY Regional Hospital	6	0
Pattz Regional Medical	5	0
St. Mark Hospital	17	3
Petersburg Medical Center	12	0
Sinai Medical Center	36	2
McHoughton Children's Hospital	53	0
Friends of Purpose Medical	37	3
H Alexian Sisters Medical	37	1
St. Mason Hospital	0	0
Capitol Memorial Hospital	2	0
Finich-American Hospital	5	0
Torongo District Hospital	181	5

Halprezy District Hospital	2	0
DGT Memorial Hospital	11	0
Palmharst Hospital	20	4
St. Edward's Hospital	66	0
Presence St. John Medical	14	0
Gateway Community Hospital	96	0

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*Note.* CDI = clostridium difficile infections, CLABSI = central-line associated bloodstream infections. Adapted from “State Reports of Current Interest” by the Illinois Department of Public Health, 2019, ([http://www.healthcarereportcard.illinois.gov/contents/view/State\\_Reports\\_of\\_Current\\_Interest](http://www.healthcarereportcard.illinois.gov/contents/view/State_Reports_of_Current_Interest))

## Results

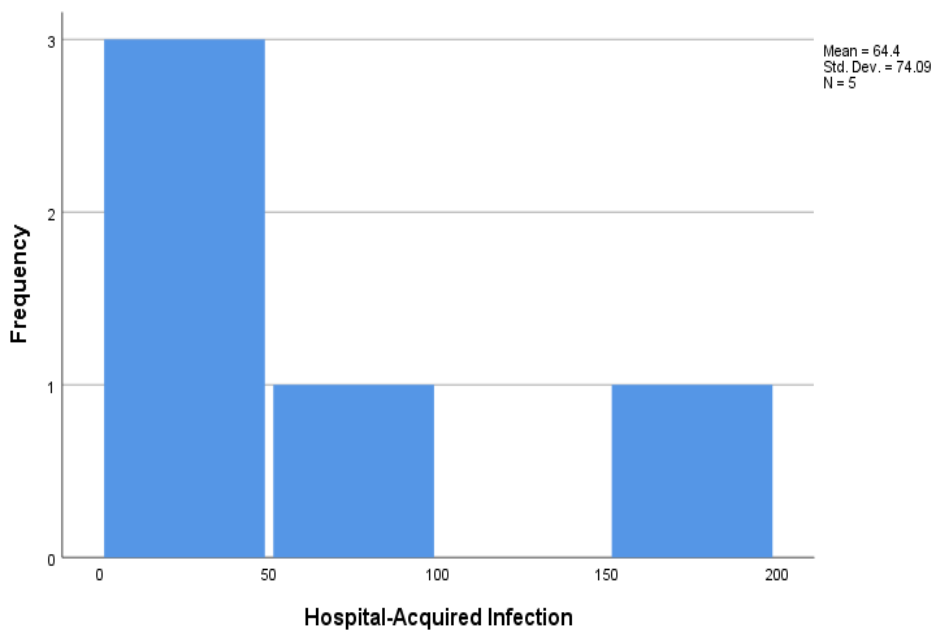
### Descriptive Statistics

#### *HAI*s

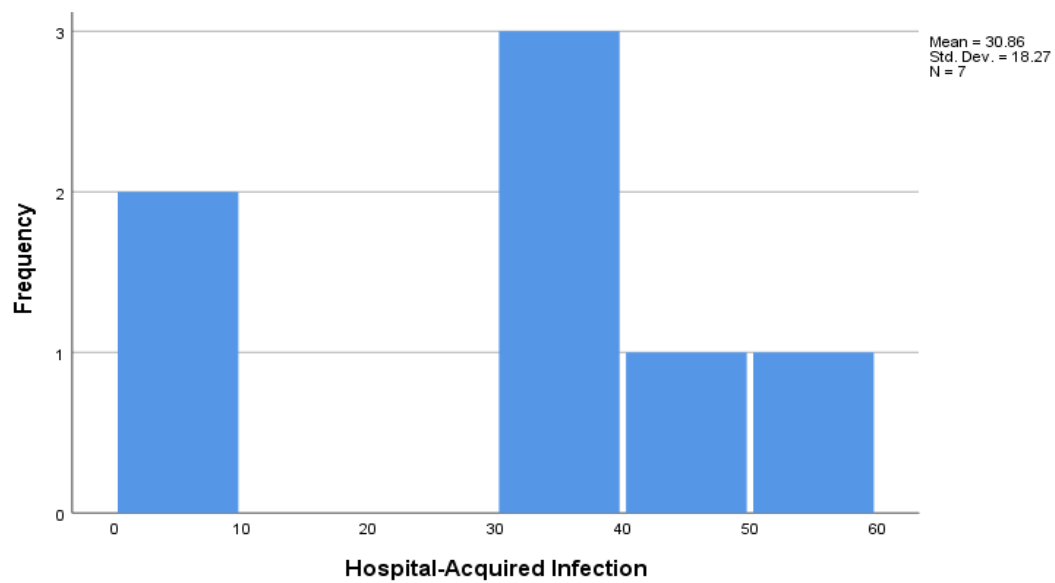
I used HAIs as a proxy of patient care safety. The descriptive analysis of the HAIs was carried out to assess their distribution across high- and low-SES acute care hospitals. The five observable cases of HAIs that were captured in the high-SES acute care hospitals had a mean of 64.4, as shown in Figure 1, while the seven observable cases captured in the low-SES acute care hospitals had a mean of 30.86 (see Figure 2). These results indicate that the high-SES hospitals experienced higher incidences of HAIs than the low-SES hospitals; therefore, there is a higher likelihood of compromising patient care safety in high-SES hospitals than in the low-SES hospitals.

**Figure 1**

*Frequency of HAIs in High-SES Hospitals*

**Figure 2**

*Frequency of HAIs in Low-SES Hospitals*



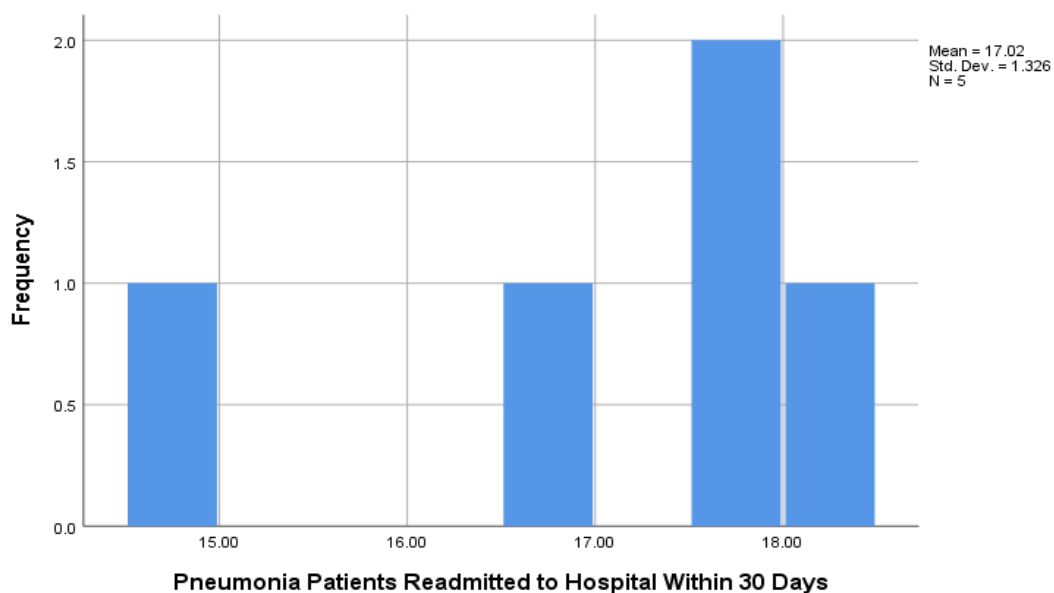
### ***Hospital Readmission Rates***

I used the average of readmission rates for pneumonia patients, heart failure patients, and heart attack patients within 30 days as a proxy factor for patient care quality. The descriptive analysis of the readmission rates for each of the elements is outlined in Figures 3–8.

#### **Readmission Rates of Pneumonia Patients.**

**Figure 3**

*Frequency of Pneumonia Readmissions in High-SES Hospitals*

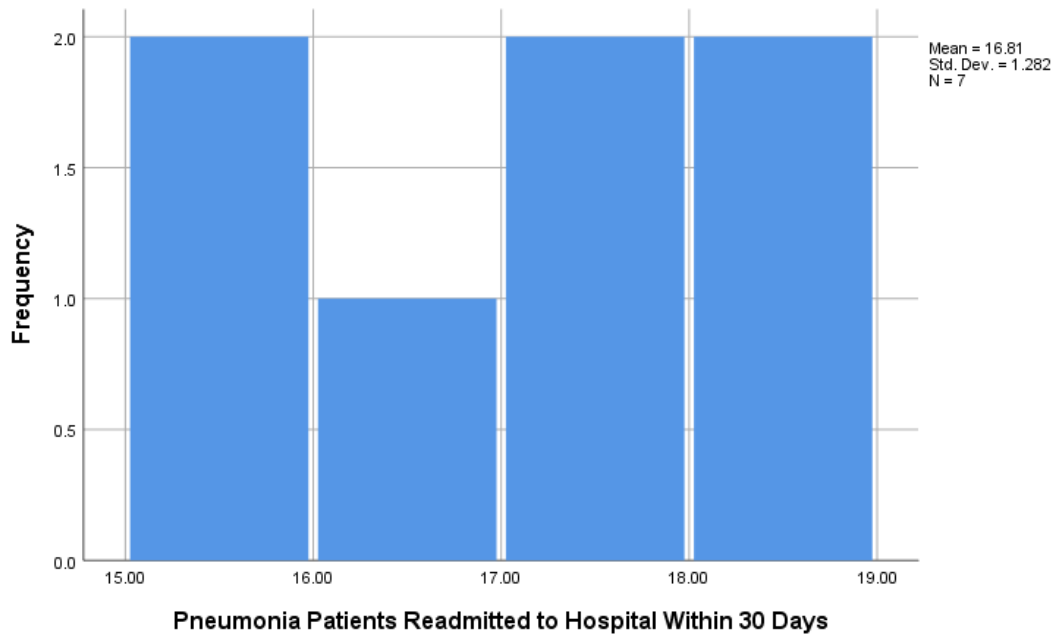


The five observable cases in readmission numbers for pneumonia patients in the high-SES acute care hospitals had a mean of 17.02, as shown in Figure 3. Figure 4 shows seven cases of readmissions for pneumonia patients in the low-SES acute care hospitals, with a mean of 16.81. The results indicate that high-SES hospitals experienced higher incidences of readmission for pneumonia patients within 30 days of the period of analysis

than the low-SES hospitals and, therefore, have a higher likelihood of compromising patient care quality.

#### Figure 4

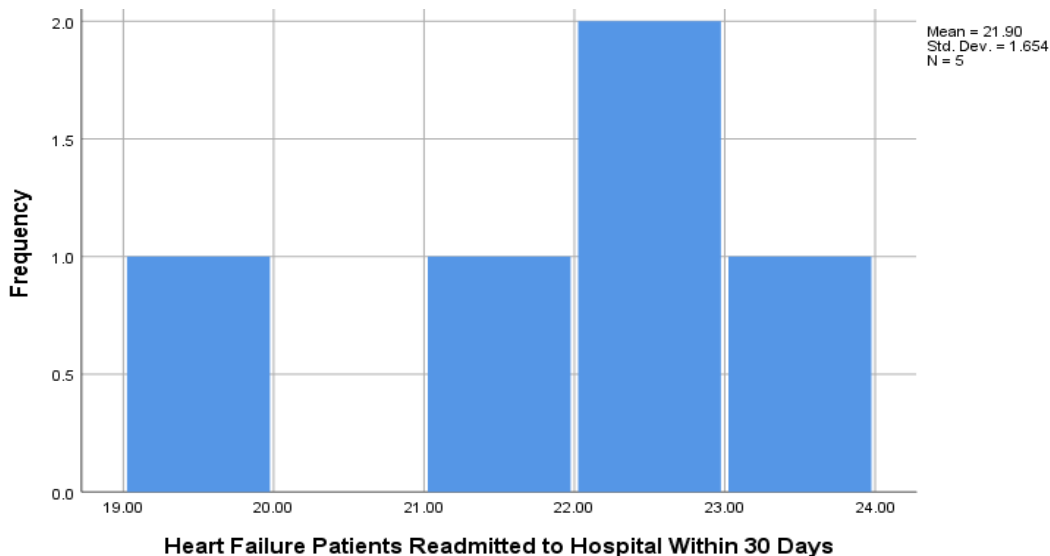
*Frequency of Pneumonia Readmissions in Low-SES Hospitals*



**Heart Failure Patients.**

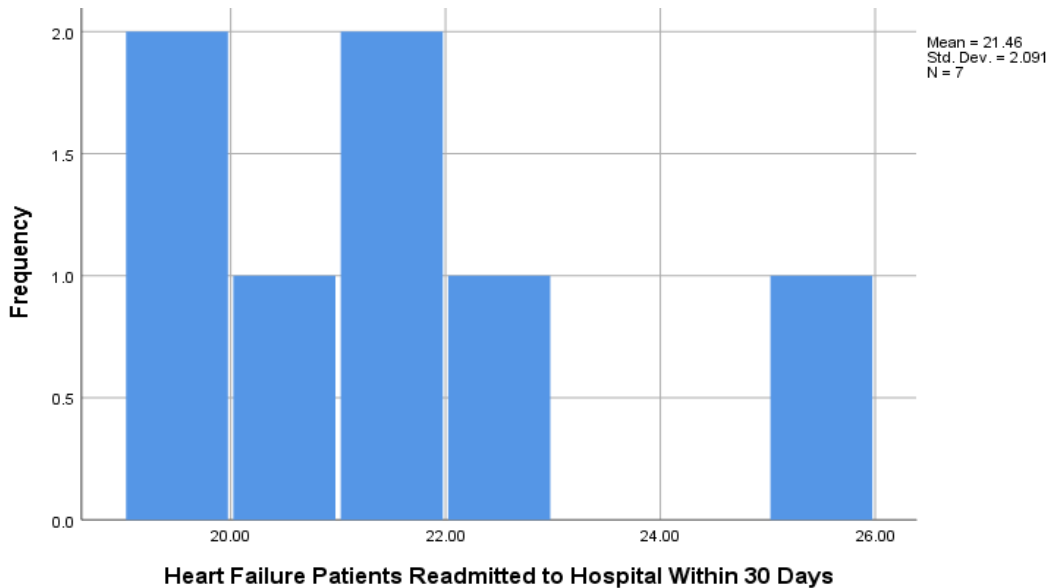
**Figure 5**

*Frequency of Heart Failure Readmissions in High-SES Hospitals*



**Figure 6**

*Frequency of Heart Failure Readmissions in Low-SES Hospitals*



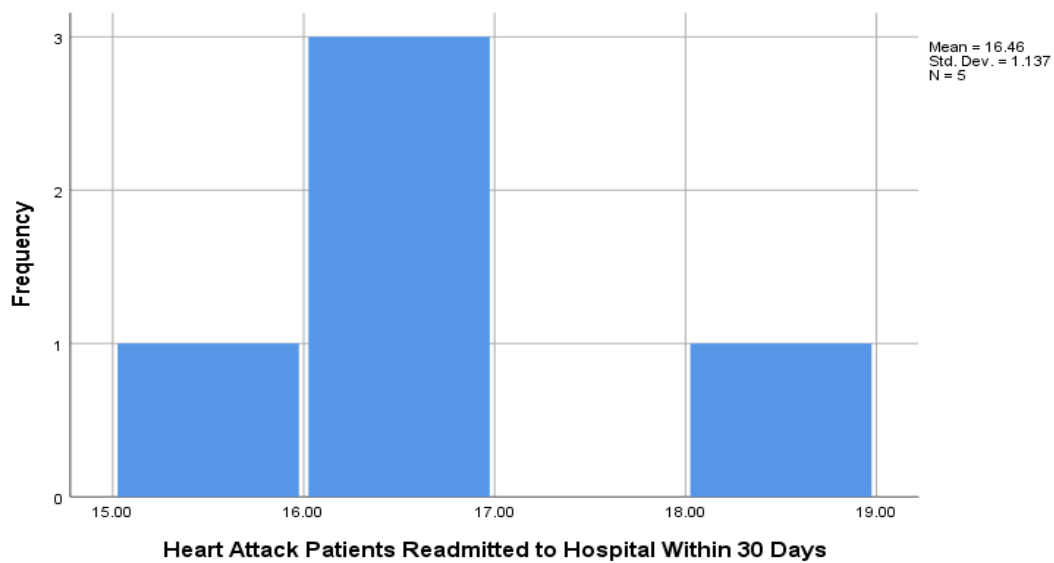
The observable cases of the readmissions of heart failure patients in high-SES acute care hospitals had a mean of 21.90 (see Figure 5), while readmissions in low-SES acute care hospitals had a mean of 21.46, as shown in Figure 6. According to the results, high-SES hospitals experienced higher incidences of patients being readmitted for heart failure than low-SES hospitals. The implication is that high-SES acute care hospitals have a higher likelihood of compromising patient care quality compared to low-SES hospitals

**Heart Attack Patients.** For the cases observed, the mean of the readmission rates of heart attack patients in high-SES acute care hospitals was 16.46 (see Figure 7). The readmissions for heart attack patients in low-SES acute care hospitals had a mean of 16.50, as shown in Figure 8. These results were an exception because the low-SES hospitals experienced higher incidences of patients being readmitted for heart attack than the high-SES hospitals, unlike the other assessed ailments (i.e., pneumonia and heart failure).

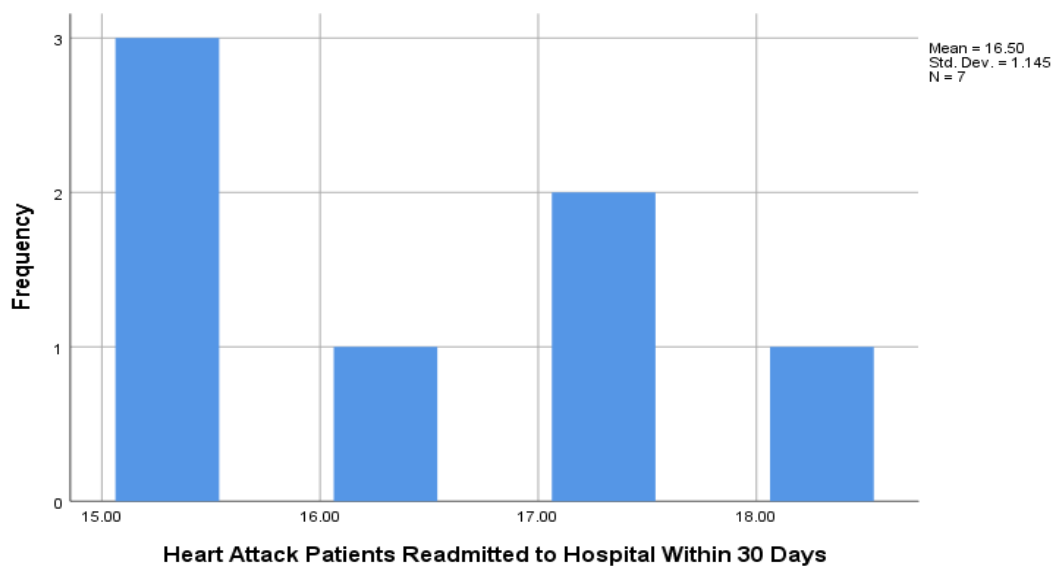


**Figure 7**

*Frequency of Heart Attack Readmissions in High-SES Hospitals*

**Figure 8**

*Frequency of Heart Attack Readmissions in Low-SES Hospitals*



### Research Question 1: Patient Care Quality and Hospital SES

Independent samples *t* test was conducted to compare the quality of patient care between low SES and high SES acute care hospitals in Chicago. The outcome of the group statistics comparing patient care quality with hospitals' SES revealed low association between the two variables. Table 2 shows that patient care quality is not significantly different between low SES hospitals ( $M = 18.49$ ,  $SD = .9400$ ) and high SES hospitals ( $M = 18.32$ ,  $SD = 1.6138$ ).

#### *Hypothesis Testing*

Table 3 shows that there is no statistical significant difference in patient care quality between low SES hospitals and high SES hospitals,  $p = .787$  ( $p \leq 0.05$ ). The null hypothesis was not rejected and the alternative hypothesis was rejected. The outcome implies that patient care quality was not dependent on the hospitals' socio-economic status.

### Research Question 2: Patient Care Safety and Hospital SES

Independent samples *t* test was conducted to compare patient care safety between the low SES and high SES acute care hospitals in Chicago. Table 2 shows group statistics analysis in high SES hospitals ( $M = 39.70$ ,  $SD = 58.994$ ) and low SES acute care hospitals ( $M = 30.0$ ,  $SD = 18.637$ ), stating that the two variables of patient care safety and hospitals' SES had low association.

#### **Table 2**

##### *Group Statistics Analysis*

Hospital Socio-Economic Status (SES)	N	Mean	Std. Deviation	Std. Error Mean
--------------------------------------	---	------	----------------	-----------------

Patient care safety	High socio-economic status	10	39.70	58.994	18.655
	Low socio-economic status	10	30.00	18.637	5.893
Patient care quality	High socio-economic status	10	18.3200	1.61379	.51032
	Low socio-economic status	9	18.4889	.94004	.31335

### ***Hypothesis Testing***

From the outcome shown in Table 3, there is no statistically significant association between hospital's SES and patient care safety  $p = .626$  ( $p \leq 0.05$ ). Therefore, the null hypothesis was not rejected; rather, the alternative hypothesis was rejected. The outcome implied that the patient care safety was not dependent on the hospital's SES.

**Table 3***Independent Sample Test*

Independent samples test										
Levene's test for equality of variances										
t test for equality of means									95% confidence interval of the difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	Lower	Upper
Patient care safety	Equal variances assumed	6.298	.022	.496	18	.626	9.700	19.564	-31.403	50.803
	Equal variances not assumed			.496	10.779	.630	9.700	19.564	-33.469	52.869
Patient care quality	Equal variances assumed	2.642	.122	-.274	17	.787	-.168898	.6155	-1.4675	1.1297
	Equal variances not assumed			-.282	14.713	.782	-.16889	.5989	-1.4475	1.1097

**Logistic Regression**

I used binary logistic regression analysis to assess the associations between SES and patient care quality and safety. The importance of binary logistic regression is to determine the extent to which independent variables predict the dependent variables and affirm the “goodness-of-fit” test of the model. Table 4 outlines the observed versus predicted outcome for hospital SES. The results suggest that six hospitals fell under the

high-SES category while four fell in the low-SES category. The logistic regression model indicated that out of 10 hospitals with a high SES, the prediction was correct six out of 10 times with a correct percentage of 60%. Additionally, the prediction had five acute care hospitals in high-SES category and four in low-SES category, implying that the prediction was correct five times out of nine with a correct percentage of 44.4%. The overall correct percentage was 52.6%, suggesting that the model is of good fit.

**Table 4**

*Classification Table*

<b>Classification table<sup>a</sup></b>					
Observed			Predicted		
			Hospital's socioeconomic status		Percentage correct
Step1	Hospital's socioeconomic status	Hospital's socioeconomic status	High socioeconomic status	Low socioeconomic status	
	High socioeconomic status	High socioeconomic status	6	4	60.0
	Low socioeconomic status	Low socioeconomic status	5	4	44.4
Overall percentage					52.6
<b>a. The cut value is .500</b>					

I used Table 5 to determine whether null hypotheses should be rejected and the alternative hypotheses accepted or fail to reject both null hypotheses. The table displays a comparative analysis of the independent variables against the dependent variables. The outcome revealed that there was no significant association between patient care quality and hospital's SES  $p = .775$  ( $p \leq .05$ ). The null hypothesis was not rejected as patient

care quality did not differ significantly between low-SES and high-SES acute care hospitals.

Also, the outcome showed that there is no statistically significant association between hospitals' SES and patient care safety  $p = .536$  ( $p \leq .05$ ). The null hypothesis was, therefore, not rejected.

**Table 5**

*Variables in the Equation*

		<i>B</i>	<i>S.E.</i>	Wald	<i>df</i>	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step	Patient care safety	-.007	.012	.384	1	.536	.993	.970	1.016
1 <sup>a</sup>	Patient care quality	.105	.366	.082	1	.775	1.111	.542	2.277
	Constant	-	6.770	.070	1	.791	.167		
		1.792							

<sup>a</sup>. Variable(s) entered on step 1: Hospital-Acquired Infection, Average Hospital Readmission Rate.

### Summary

In this section, I presented the data collection outcomes, results from descriptive statistics, independent samples test, and logistic regression analysis. In the study, I examined whether patient care quality and patient care safety were related to hospitals' SES in Chicago's acute care hospitals. The results of the logistic regression model showed the analysis was a correct fit and displayed the linkage between the dependent variables and the independent variables. From the statistics, patient care quality did not have any significant association with hospitals' SES; hence, there was no difference in patient care quality between hospitals of low SES and hospitals of high SES in Chicago's acute care hospitals. Also, the analysis of the independent variable of hospitals' SES did

not exhibit any significant relationship with patient care safety. Thus, there was no difference in patient care safety between hospitals of low SES and hospitals of high SES in Chicago's acute care hospitals. Further details of the outcomes of data analysis are provided in Section 4.

## Section 4: Applications to Professional Practice & Implications for Social Change

### **Introduction**

The purpose of this quantitative study was to examine if patient care quality and safety are related to hospitals' SES among Chicago's acute care hospitals. Two research questions guided this study. Based on the results, both null hypotheses failed to be rejected because there was no statistically significant association between hospitals' SES and patient care safety as well as no statistically significant association between hospitals' SES and patient care quality.

### **Interpretation of the Findings**

The findings suggested that neither patient care quality nor patient care safety was associated with hospitals' SES. Studies that have investigated the impact of SES on health care access found significant differences between health care access and quality of care between individuals of low SES and those of high SES (McMaughan et al., 2020). Zhang et al. (2021) found that patients from socially disadvantaged neighborhoods have a higher likelihood of being hospitalized. In this study, however, I explored how hospitals' SES impacted their provision of health care. The reference category for the SES of a hospital in the current study was its eligibility status for Medicaid's DSH payment adjustments, whereby low-SES hospitals were assumed to qualify for DSH payments due to their tendencies to serve patients from disproportionately disadvantaged backgrounds. Nonetheless, it is worth mentioning that there were inconsistencies in data reporting for most conditions used as proxies by several hospitals, which could have skewed the data.



## Patient Care Quality and SES

The outcome of the study's group statistics did not show difference between patient care quality in low-SES acute care hospitals ( $M = 18.49$ ,  $SD = .9400$ ) and high-SES acute care hospitals ( $M = 18.32$ ,  $SD = 1.6138$ ). The results of the independent samples  $t$  test showed that there was no statistical significance between the differences in hospitals' SES and patient care quality  $p = .787$  ( $p \leq 0.05$ ). As a result, the null hypothesis failed to be rejected. For this study, I used the average rate of hospital readmissions for select conditions to gauge patient care quality. This reiterates the findings of Dharmarajan et al. (2013) who reported that the distribution of readmissions for heart failure, acute myocardial infarction, and pneumonia was similar across high-performing and low-performing hospitals. Similarly, Bernheim et al. (2016) compared the risk-standardized readmission rates for hospitals caring for high- and low-categories of patients in accordance with their Medicaid SES and did not find significant association between SES and readmission rates. According to Silvestri et al. (2022), community level factors, which include the SES of a hospital, did not have meaningful effect on the number of hospital readmissions and did not affect hospital rankings.

Nonetheless, there are studies that have suggested SES has a direct influence on the rate of hospital readmissions and affects the quality of health care (Gershon et al., 2019). There are, however, measures that can be adopted by hospitals to reduce readmission rates, which can explain the lack of association between hospitals' SES and patient care quality. Considering that majority of the hospital participants in the current study could have adhered to quality measures of health care as envisaged by CMS, the

variations in quality measures did not have to be profound between the high-SES and low-SES acute care hospitals. As per the CMS's (2022) Hospital Readmissions Reduction Program, all hospitals were encouraged to enhance communication and improve coordination of care so as to avert preventable readmissions. With the small sample size that was investigated in this study, it could be possible that all hospitals in the study had strictly adhered to the norms required of them to engender high quality, safe patient care. Moreover, the role of moderating factors, such as the number of registered nurses at a hospital and the age of the hospital, could have influenced the strength of association between hospitals' SES and the dependent variables. For instance, a 10% increase in the proportion of nurses at a hospital was found to reduce preventable deaths and incidence of myocardial infarction, pneumonia, and surgical patients' readmissions at a hospital (McHugh & Ma, 2013). In that regard, this could be a possible limitation that could have explained the association as expected if included as a variable.

### **Patient Care Safety and SES**

Patient care safety is considered to vary between hospitals of low-SES and high-SES. Hospitals of high SES are expected to have better strategies to enhance delivery of safe health care than low SES hospitals (Arpey et al., 2017). Mo et al. (2019) found that patients who acquired multidrug resistant nosocomial infections at different times in a low-SES medical facility cited inadequate care as the main cause of HAIs. Low-SES hospitals experience high incidences of HAIs due to financial challenges that may impede access to high-quality medication and employment of adequate staff to provide safe and timely care for patients.

In the current study, I did not find an association between patient care safety and hospitals' SES. The group statistics analysis between high-SES acute care hospitals ( $M = 39.70$ ,  $SD = 58.994$ ) and low-SES hospitals ( $M = 30.0$ ,  $SD = 18.637$ ) indicated that patient care safety had low association with hospitals' SES. This was consistent with the results of the hypothesis test conducted using an independent samples  $t$  test. The null hypothesis failed to be rejected because there was no statistically significant association between hospitals' SES and patient care safety  $p = .626$  ( $p \leq 0.05$ ). The implication is that the rates of HAIs did not statistically differ between low-SES and high-SES acute care hospitals. Although Mo et al. (2019) utilized semi structured interviews to obtain the perspectives of patients regarding their trauma regarding HAIs; I only used secondary data of the selected HAIs at each facility. Furthermore, the sample considered in the current study may not have been substantial enough to determine the strength and direction of association between the variables.

### **Limitations of the Study**

This study had some limitations based on its nature and design. First, the study used secondary data, which may be a potential source of errors. Thompson (2017) stated that reliance on secondary data as a source of records for research can plague a study with human error because the data are researched and entered by another individual unknown to the researcher. Second, the "pay for performance" model is designed in such a way that it rewards health care providers and professionals for meeting specific set targets of patient care quality and safety (Mathes et al., 2019). However, the urge to make a

positive impression on the public may tempt health care providers to be biased in their data reporting, which can mask underlying cases of readmissions or HAIs.

Third, missing data in some of the study site hospitals could have limited the outcomes of this study. For instance, some hospitals lacked data for readmission rates on heart failure, heart attacks, and pneumonia, which possibly affected the true representation of the variables' outcomes.

The choice of the proxy factors used to measure hospitals' SES for Chicago's acute care hospitals, patient care quality, and patient care safety was another possible limitation of this study. There are other elements that can influence a hospital's SES, including hospital's alignment of goals to engender a culture of excellence that results in the realization of high-quality and safe patient care. Therefore, using hospitals' eligibility status for Medicaid DSH payment reduced the validity of the study and could have affected the outcomes as well. Similarly, the readmission rates were reported in percentages while the HAIs were given as a count of the cases observed, which may have reduced internal validity of the study. Finally, the small sample size used in this study posed a threat to the external validity of the study. The sample was also subjectively chosen through convenience sampling, which may have failed to capture the true picture of the scenario under investigation.

### **Recommendations**

I outlined recommendations for further study on the topic with reference to the outcomes of this study. The findings established that there was no association between hospitals' SES and patient care quality and safety. Future researchers should conduct

further exploration of this topic to establish if positive social change can result in improved health care practices for acute care hospitals.

Confounding variables could have also influenced the outcomes of the findings of this study. The methodology employed in the study could have overlooked the complexity of the relationship between hospital's SES and health care outcomes. For instance, the number of registered nurses, which is a mediating variable of hospitals' SES, could influence patient care outcomes, which determine the extent and severity of readmissions for common comorbidities, such as pneumonia, heart attack, and heart failure. I considered the number of registered nurses available for recruitment and retaining at a health care facility to be a mediator of a hospital's SES because low-SES acute care hospitals may be limited in funding and have challenges in recruiting and retaining professional nurses, which impacts health care administration (see Nayfeh & Fowler, 2020). In addition, moderating variables, such as funding models, could have influenced the strength of the relationship between low-SES and high-SES acute care hospitals. Hospitals that have additional funding apart from Medicare or that provide private insurance to patients could have better patient outcomes relative to the under-resourced hospitals. Therefore, future research on this topic could include mediators and moderators to explore the relationship beyond the simple association between SES as independent variable and patient care quality and safety as dependent variables.

The other key limitation that could have impacted the outcomes of this study was the use of proxy factors as the dependent variables. Patient care quality is a health care outcome that is measured using different metrics, which can infer confusion and

complexity among different consumers of health care information (CMS, 2022). It is likely that different hospitals report different measures, which was evident by the missing data on readmission rates from some hospitals. Hospitals in low-socioeconomic neighborhoods may not report certain measures, which will impact the comparison between hospitals. This issue was also compounded by the small sample size used in the current study. Future studies should employ diverse and large samples to cater for hospital-wide differences in data reporting and moderate the effect of missing data in some hospitals.

### **Implications for Professional Practice and Social Change**

In this section, I provide the implications concerning professional practices and social change with regard to the association of hospitals' SES with patient care quality and safety. Two proxy indicators were used in this study to measure the outcomes of patient care quality and safety in the acute care hospitals: hospital readmission rates and HAIs. The quality and safety of health care are essential measures in the assessment of health care outcomes and patient experiences. Acute care hospitals should adopt effective communication and organized workflow to boost the effectiveness of physicians and nurses in averting preventable HAIs and reduce readmissions for ailments, such as pneumonia, heart failure, and heart attack. Although the findings did not show any significant association between (a) hospitals' SES and patient care quality, and (b) hospitals' SES and patient care safety, significant lessons for professional practice and for social change can be adopted to ensure equity of access to high quality and safe patient care across all acute care hospitals.

### **Professional Practice**

Based on the findings of this study, several professional practices can be considered to enhance health care equity in terms of patient care quality and safety between low-SES and high-SES hospitals. The seriousness of using patient care quality and safety as a metric of concern in health care is underscored by the IDPH (2022), which argued that up to 98,000 Americans succumb each year to preventable illnesses that result from medical errors. This costs the government over \$17 billion dollars annually in compensations for medical errors, contributing to an increase in costs to health care consumers (Warchol et al., 2019). The findings in the current study indicated that there is no significant association between hospitals' SES and patient care safety,  $p = .626$  ( $p \leq 0.05$ ). Similarly, the analysis of group statistics in high-SES acute care hospitals ( $M = 39.70$ ,  $SD = 58.994$ ) and low-SES hospitals ( $M = 30.0$ ,  $SD = 18.637$ ) suggested that there was low association between patient care safety and hospitals' SES.

In collaboration with the Centers for Disease Control and Prevention (CDC), the IDPH has plans to reduce HAIs to improve safety of health care in acute care hospitals in the state of Illinois (IDPH, 2016). In its action plan, the IDPH outlined fundamental interventions that can be adapted by acute care hospitals to reduce HAIs, thereby improving patient care safety. These strategies include following standard and transmission-based measures, using personal protective equipment appropriately, performing hand hygiene regularly and as expected, disinfecting medical appliances while discarding used ones appropriately, maintaining a clean working environment, and maintaining proper communication (IDPH, 2016). In reference to the findings of this

study, health care leaders, including the leadership of nurses, is required to carry out training and education of health care professionals to equip them with knowledge and competencies to detect, investigate, and respond to infectious outbreaks, such as community HAIs and antimicrobial resistance.

Regarding patient care quality, the rate of hospital readmissions for patients suffering from select conditions need to be further reduced. Some of the strategies are those that focus on the socioeconomic factors that impede low-income patients from accessing health care on time, which exacerbates conditions and result in increased likelihood of readmissions. Warchol et al. (2019) recommended two strategies that can be used by health care leaders in acute care hospitals to reduce hospital readmissions for preventable conditions. First, the authors contended that data analytics can help acute care hospitals to predict with accuracy the likelihood of readmissions and develop discharge protocols that help in preventing avoidable cases of readmissions. Second, acute care hospitals can use electronic health records to discover pertinent issues regarding patients' conditions. Acute care hospitals may then use information obtained from electronic records to frame the structure of patients' diagnoses and referrals, helping to prevent avoidable readmissions. These strategies, if effectively reinforced by the IDPH through its action plan on reducing HAIs and the number of 30-day readmissions, could help acute care hospitals to improve patient care quality and safety across the continuum of care.



## **Methodological**

There are extant methodological opportunities that could be employed to improve the internal and external validity of future studies on this topic. Future studies can use a larger sample size while employing a principal component analysis of the hospital's SES to develop a composite hospital's SES. Additionally, principal component analysis could be used to measure patient care quality and safety by utilizing the core measures of quality and safety of health care, including 30-day readmissions for the select conditions, risk-adjusted inpatient mortality, 30-day mortality, indicators of patient safety from inpatient admissions, inpatient days by category of service, process of care chart review, patient characteristics, CMS pay for performance score of the hospital, and patient experience surveys. I believe the inclusion of additional covariates would provide rigor to the future study and help in pinpointing the strength and direction of association between the independent variable and dependent variables of the current study.

## **Theoretical**

This study was anchored on the DQF. The suitability of DQF to this study is underpinned by its focus on the quality of interactions between the physician and his/her patients (Allen-Duck et al., 2017). The DQF provides three elements of quality of health care: structure, processes, and outcomes (Binder et al., 2021). Structures include the portrait of the place where health care occurs, including the equipment, instruments, standards, practices, and staffing; processes define the events such as counseling, medication, therapy; while the outcome entail the impact of the provided healthcare to the selected population. Understanding the synergy of relationship between these elements

and how they influence the quality of health care is significant in outlining strategies that can be adopted to reduce discrepancies in the quality and safety of health care between low-SES and high-SES acute care hospitals in Chicago, Illinois. Structures can include the number of health care professionals, such as the number of registered nurses.

Therefore, future studies can enhance the rigor of the study through comprehensive analysis of the relationship between hospitals' SES and quality and safety of patient care by integrating the role of mediators and moderators in the research. Lack of mediating and moderating variables is one of the limitations that could have affected the validity of this study. For a holistic analysis of how SES influences quality and safety of care, future studies should explore the relationship between the variables examined in the current study by considering their impact on the strength and direction of the relationship.

### **Empirical**

While this study failed to reject the null hypotheses for both research questions, the onus is upon future researchers to find out the effect of hospitals' SES on quality and safety of care through integration of other variables. Additionally, the sample size can be increased to broaden external validity. Instead of focusing on few proxy indicators, future studies can utilize principal component analysis to analyze how various indicators of patient care quality and patient care safety are associated with the hospitals' SES.

### **Positive Social Change**

In tandem with the Walden University's mission of tying the students' research with positive social change implications, the findings of this study may be used to accomplish positive social change through proven strategies to enhance quality and safety

of patient care in acute care hospitals. Although I did not find significant association between hospitals' SES with patient care quality and safety, social support programs may focus on all areas of hospitals' SES with patient care quality and safety. All acute care hospitals can use the findings of this study to dissociate hospital's SES from the quality and safety of patient care. The results suggest that individual hospital factors, excluding SES, linked to the prevention of patients' readmissions and HAIs may be attributed for high or poor patient care quality and safety.

Hospital factors that affect the culture of patient safety are important in understanding the role of individualized quality care in acute care hospitals. In Mihdawi et al. (2020), staffing, adequate resources, nurses' participation and advancement, and effective workplace communication significantly affected the quality of care provided to patients. Nurses form an important component of patients' recovery process; thus an inclusion of nurses in the making of decisions related to patient management is fundamental to enhancing patient safety. Where acute care hospitals are understaffed, quality of care could be compromised. In order to conduct investigations regarding HAI outbreaks and to leverage surveillance data for effective public health response, acute care hospitals require adequate and well-trained health professionals who can accelerate provision of quality care across the spectrum of care in all HAI prevention units. The current study could be used to create awareness on holistic approaches that may be adopted by acute care hospitals to improve patient care quality and safety without associating it with the SES of hospitals.

Additionally, acute care hospitals could adopt patient-centric models of care to improve the quality of patient experience with health care. According to Bellio and Buccoliero (2021), patients' satisfaction is affected by the blending of positive patient experiential factors. The perception of high quality of physical environment positively impacts patients' experiential satisfaction, with quality of patients' empowerment through dignified patient-doctor relationship mediating this relationship. This implies that acute care hospitals should work on other factors that increase patients' experiential satisfaction in order to improve the quality and safety of patient care. This study is consistent with the findings of Kuipers et al. (2019) where patient-centric care was found to increase health care outcomes. These practices may enable acute care hospitals to reduce the number of readmissions for select conditions and to prevent HAIs.

At the individual level, acute care hospitals in Chicago can adopt standard transmission-based precautions, provide adequate protective personal equipment for health professionals, create awareness on hygiene maintenance, and support organized communication to encourage preventive measures against HAI outbreaks and avoidable readmissions (IDPH, 2016). As a family of acute care hospitals, recent findings suggest that HAIs pose significant threat to patient safety and threaten the fiscal viability of acute care hospitals under pay-for-performance system (Vokes et al., 2018). As a result, positive social change may be realized with the use of empirical practices aimed at reducing hospital-acquired infections in acute care hospitals. The management of acute care facilities should support frontline providers and infection control staff such as nurses to enhance the adoption of practices that prevent and reduce HAIs from occurring.

Horizontal infection strategies such as hand hygiene, central line insertion bundles, and provision of safety checklists to be followed by staff in acute care hospitals may result in positive social impact across the spectrum of care in Chicago's acute care hospitals.

At the organizational level, improving communication has been found to enhance the transfer and adoption of best practices in hospitals. IDPH (2016) argues that effective communication across the spectrum of care is crucial in expediting the implementation of interventions to reduce hospital readmissions and to prevent HAIs. The employment of communication interventions at discharge were found to result in significantly reduced rates of hospital readmissions and increased adherence to treatment, which improved patients' experiential satisfaction with care (Becker et al., 2021). Therefore, acute care hospitals should strive to establish communication with clients before and after discharge to achieve improved health care outcomes.

At the society level, the adoption of best practices to prevent HAIs and antimicrobial resistance as advocated by the IDPH should be prioritized by all acute care hospitals, regardless of their SES, to improve the quality and safety of patient care. Education for policy makers, hospital administrators, as well as community members may achieve significant results in reducing the number of cases of readmission for the select conditions. Improvement of patient care quality and safety across all acute care hospitals may also lead to reduced cases of HAIs.

### **Conclusion**

Several studies have focused on the relationship between SES of patients and their health; however, there is paucity of quantitative research regarding the relationship

between the SES of acute care hospitals with patient care quality and safety. This study is unique for examining whether patient care quality and patient care safety are related to hospitals' SES in Chicago's acute care hospitals. Although the findings did not support any statistical association between hospitals' SES with patient care quality and safety, this study has provided the impetus for a more rigorous research that considers the moderators and mediators of hospitals' SES in influencing quality and safety of patient care in acute care hospitals. Future studies can build on the findings of this study to explore the relationship between patient care quality and safety with hospitals' SES.

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