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A Comparison By Ethnicity of Usage of Medication, Intubation Use, and Mortality Rates of COVID-19 Patients in an Urban Hospital

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Evidence from an urban hospital initially revealed that ethnicity had no bearing on treatment modalities or mortality among patients admitted and diagnosed with COVID-19 symptoms from January 1, 2020 to January 1, 2021. The purpose of this study was focused on answering three principal research questions concerning evidence at one hospital of differences in medication used, whether intubation was used, and mortality by ethnicity for those treated for COVID-19 while controlling for age, gender, and co-morbidities. The health belief model served as the theoretical framework. Data was collected from 1188 patient charts, and binary logistic regression was used to test hypotheses. Results showed no statistically significant differences in medication use, intubations, or mortality outcomes by ethnicity. It was concluded that patients at this hospital received equitable care despite ethnic differences. Positive social change implications include the focus on equitable healthcare for all that can help alleviate the ill-effects of treatment disparities.

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Dedication

I dedicate this work to the many people who have dedicated their time and have been there for me throughout my PhD journey. The members of Chabad of Forest Hills North for their support throughout my PhD journey. To the memory of my late grandparents, Zalman Baruch, Lea Baruch, and Helen Gross, who meant the world to me and told me that my hard work will eventually pay off one day. You encouraged me to reach my full potential. I dedicate my doctoral degree to my relatives and cousins who perished in Israel due to accidents and suffering from diseases encountered in older age. I also dedicate this advanced degree to Melissa Greenwood, a close friend since childhood who passed away far too soon. I thank my brother Michael Baruch and his wife Lauren Baruch for their support and encouragement. To Dr. Herbert Sherman, Ph.D., who supported me in getting the doctorate and sharing with me what he went through in his dissertation excursion. I thank Dr. Gary S. Winn, MPH, DO, FACOFP for offering me his expert knowledge by answering questions and providing me with feedback and in helping to edit the dissertation. Finally, I thank my mother Sheila Baruch and my father Israel Baruch, who encouraged me to get the Doctor of Philosophy degree. You were there for me every step of the way, and I love and respect you for that. I am grateful that I have you in my life.

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Chapter 1: Introduction to the Study

This study addressed the reasons why ethnic minorities had certain health outcomes when treated at a central Queens hospital based on the covariates age, gender, ethnicity, comorbidities, hospital floor level where COVID-19-positive patients were treated, and the predictor or explanatory independent variable, which was the length of hospital stay. A central Queens hospital was selected for the study because COVID-19 was a serious concern for a diverse patient population—Hispanics, non-Hispanics and Latinos, African Americans or Blacks, Asians, and those with diverse multiethnic backgrounds—with underlying health conditions (Sultan et al., 2020). The number of patients dying from coronavirus increased each week at the central Queens hospital, contributing to the increased overall death toll (Kaufman, 2020). In this study, I explored the association between several risk factors (i.e., age, gender, ethnicity, comorbidities, and geographic location) that contributed to the treatment modality used and the fatality rate. Extensive research is essential to help understand why age, gender, ethnicity, and comorbidity influenced patient outcomes (Biswas et al., 2021).

The study period of this dissertation was from January 1, 2020, to January 1, 2021, which was the peak and the initial stages of the COVID-19 crisis (LoGiudice et al., 2020). During this time period the disease spread throughout the world. As a result, it caused many people to become ill, and it increased the mortality rate (LoGiudice et al., 2020). According to the statistics, within this length of time during the COVID-19 crisis, 5,657,529 cases of COVID-19 were recorded, and 356,254 deaths were confirmed globally (LoGiudice et al., 2020). Throughout the initial phase of the COVID-19 crisis, the WHO said that the COVID-19 event was an infectious disease outbreak. Disease preparedness strategies and an emergency management plan were carried out to help mitigate the impact of the disaster (LoGiudice et al., 2020).

During the study period, the Delta variant which was the mutated form of the SARS- CoV-2 virus had the most impact on the number of people being hospitalized, and deaths at the central Queens hospital (Tareq et al., 2021). The Delta variant became prominent when it was a concern in India in the late 2020. The patients being cared for did not receive their intended treatments, and patients had many signs and symptoms, including difficulty in breathing, stomach problems, nausea, vomiting, and hearing difficulties. Furthermore, when the Delta variant became an issue, patients were evaluated by undergoing a physical examination in the hospital, and the variant made the disease more life-threatening (Tareq et al., 2021). COVID-19 cases in patients of all ages increased, and the risk for infection became greater. Under the effect of the Delta variant, COVID-19 spread more rapidly and had a high transmission rate and therefore people had to take precautions against being attacked by the deadly virus. The Delta variant increased the mortality rate and the patient’s length of hospital stay due to the severe manifestations that the disease caused (Tareq et al., 2021). The Delta variant increased people’s resistance to the virus during the disease outbreak (Tareq et al., 2021).

The goal of the present study was to demonstrate that people who identified as minorities received lower-quality treatment compared with White people and that White individuals received preferential or better treatment than non-Caucasians (Wadhera et al., 2020). The difference in quality of treatment or different treatment modality was an independent variable in the study; the mortality of COVID-19-positive patients was the dependent variable, and the length of hospital stay was a predictor or explanatory independent variable that influenced whether the patient survived their illness or died in the hospital based on the type of treatment received. Approximately 1,188 charts from the central Queens hospital were reviewed to show that ethnic minorities had the worst health outcomes.

Potential positive social change implications of the study is that the central Queens hospital showed no differences in treatments given to different people of different ethnicities. Through this study we can see that at central Queens hospital for the time studied which was January 2020 through January 2021 patients were not in fear that they're ethnicity may yield less treatment, less aggressive treatments, or modalities that maybe offered to other ethnic groups based upon if they are a minority. Since all COVID-19 positive patients were treated the same way and it did not depend on their ethnicity there was no bias given to people who were admitted to this medical facility. The research also had no statistically significant differences in the treatments given to different ethnic groups at the central Queens hospital. Therefore, the hospital was not biasing one ethnic group over another, and other hospitals should be practicing like central Queens hospital and having no ethnic differences in how they distribute healthcare. Other hospitals should follow the hospital located in Forest Hills Queens and treat people consistently and ethically the same across ethnic boundaries. When all eyes were upon this hospital, it rose to the occasion and showed itself to be completely non-biased in its equal distribution of treatment modalities and interventions for all ethnicities. This hospital's equal approach to treatment of minorities, as well as non-minorities should be the bellwether of how hospitals handle ethical and equal distribution of services, and approaches towards healthcare for all.

Chapter 1 includes a brief introduction and background of the study. It also presents the research questions. In addition, the chapter discusses the theoretical framework of the study and the nature of the research. Key terms used in the study were defined, and details on the gaps in the literature were provided. This chapter overall provides the reader an overview of the entire study.

Background

The novel coronavirus disease in 2019 was named SARS-CoV-2 by the World Health Organization (WHO). Coronavirus was identified through its transmission, certain signs and symptoms, and the ways people avoided contact with an infectious person. The disease was spread through respiratory droplets (i.e., being coughed or sneezed at), which contaminate the environment (Ali Shah et al., 2021). When people touched contaminated surfaces, they became infected with the virus, but being infected through a person's feces carried a relatively low risk, although some confirmed cases of COVID-19 presented with diarrhea (Ali Shah et al., 2021). Based on available data, approximately 81% of patients were either asymptomatic or mildly symptomatic, 14% had a severe form of the disease, and 5% had a critical illness, leading to failure of the heart or respiratory systems (Ali Shah et al., 2021). People at high risk for the illness had to wear a face mask, maintain social distancing, and practice good hand hygiene (Ali Shah et al., 2021).

Since the novel coronavirus disease was identified in Wuhan, China in 2019, it has become a global threat to the general population and especially to critically ill patients in intensive care units (ICUs) of medical facilities (Li et al., 2020). Patients in these units needed medications and respiratory support strategies to manage their clinical conditions. Furthermore, given the severity and spread of COVID-19, some interventions were implemented to control the effects of the epidemic (Li et al., 2020). The drug remdesivir shortened patients' hospital stays and improved their prognoses (Zuo et al., 2021). The medication targeted the viral infection process and decreased viral replication. Although vaccines had become prominent in protecting individuals against COVID-19, the currently used existing drug to treat the disease was safe and effective and could potentially reduce disease severity. High-quality data were necessary to help clinicians improve their treatment decisions for infected patients (Zuo et al., 2021).

Although the disease was a worldwide issue, the major epicenter is the United States because of the number of COVID-19 positive cases (Fong et al., 2020). The disease was an issue in the United States because of its severity among adolescents and children, as indicated by the number of fatalities among those hospitalized for COVID-19 (Antoon et al., 2021). More than 40 million people were infected, and more than 650,000 individuals died in the United States (Antoon et al., 2021). Furthermore, the disease was a primary concern for older adults because of the high number of existing cases and the number of vulnerable elderly people disabled by the disease. Although children suffered from inflammation of major body organs, which leads to severe complications and even death, disease severity was generally related to older age, comorbidities, and certain ethnicities (Antoon et al., 2021). Disease severity was assessed by admission to the emergency department or ICU of the hospital with COVID-19 symptoms and treatment received after hospitalization (Antoon et al., 2021). Individuals with high disease severity and comorbidities, such as heart disease, diabetes, obesity, and pulmonary and neuromuscular diseases, also had an increased chance of being hospitalized. Ethnicity also increased the chance of being hospitalized (Antoon et al., 2021). Given all of the factors contributing to disease severity, strategies that mitigate the impact of the disease might exist.

In particular, the virus became an issue in New York City because many hospitals faced a surge in coronavirus cases, which made managing the disease a challenge. During the worst period of the pandemic, critically ill patients, who were the most vulnerable and had poor health outcomes, in New York City medical facilities were placed on ventilators, which helped to decrease the death rate (Russell, 2020). However, whether all patients hospitalized at the central Queens hospital included in this study were put on ventilators, a difference in disease severity was evident (Russell, 2020). The disease affected ethnic minorities due to the treatment that they did or did not receive, and age, gender, and the existence of comorbidities (Russell, 2020).

The gap in the literature showed minimal or no information on how patients with COVID-19 with the best and worst health outcomes were treated at a central Queens hospital based on their age, gender, ethnicity, and underlying medical problems. Research was necessary in examining patient survival based on treatment modality and age, gender, ethnicity, and comorbidities (Marcello et al., 2020). Only a few published research explored the high burden of deaths from coronavirus at a Queens hospital located in a diverse area. The hospital served a vulnerable patient population (Hong et al., 2021). Whether the differential treatment of patients contributed to the mortality rate remained unknown (Hong et al., 2021).

The present study was conducted because though the severity of the disease was largely known, its varied impact on different ethnicities remained considerably less understood. Epidemiological data gathered from hospitals indicated that age, gender, ethnicity, and comorbidities were key risk factors in determining the susceptibility to COVID-19 (Hu et al., 2021). Furthermore, the connection between treatment modalities and patient age, gender, ethnicity, or comorbidities in different geographic locations was mostly unknown. Research was necessary in identifying the different risk factors and their influence on disease progression and the treatment patients received after diagnosis (Hu et al., 2021). By considering the composition of the population by age, gender, and ethnicity, comparisons can be made between the studied central Queens hospital and other regions of the United States.

Problem Statement

The issue that prompted the study was a desire to understand why ethnic minorities had the worst health outcomes at a central Queens hospital after exposure to a person infected with COVID-19 (Kaufman, 2020). According to the Centers for Disease Control and Prevention (CDC, 2020), people of minority backgrounds had high hospitalization and death rates after COVID-19 infection. Health disparities among different ethnic groups was a global concern (Yaya et al., 2020). Furthermore, people of minority backgrounds had more comorbid medical conditions, which made them more prone to getting sick when infected with COVID-19 (Yaya et al., 2020). Socioeconomic status, which included income, education, and occupation, also played a role in determining health outcomes (Yaya et al., 2020). A large body of evidence indicated that ethnic minorities had limited health care access and that some groups received better treatment than other groups (Thompson, 2021).

The central Queens hospital's diverse patient population showed comparatively poor life expectancy for patients with COVID-19 (Thompson, 2021). The population consisted of 13.3% African Americans or Blacks, 9.3% Asians, 42.4% of patients of another ethnicity, 0.7% Native Americans or Alaskans, and 34.3% Whites, whose lifespan might drop a full year due to COVID-19 (Richardson et al., 2020). The year-long drop was applicable to all the ethnic groups and were even more significant among specific demographics of the United States population (Richardson et al., 2020). The reasons why this hospital had such a high hospitalization and death rate during the coronavirus crisis and why the patient population was less educated than the overall population remained unknown. The key question to be answered was "Why did the worst health outcomes occur among ethnic minorities?" (Thompson, 2021).

Purpose of the Study

This quantitative study aimed to explore the approaches to treatment for patients with specific age, gender, and ethnic characteristics, as well as underlying medical conditions, in the patient population at a central Queens hospital (Levin et al., 2020). By examining the hospital's ethnically diverse patient population, the groups of people were more prone to COVID-19 at this particular facility could be identified. Furthermore, the severity of the illness differed based on a person's age, gender, ethnicity, comorbidities, and the location of the medical facility where treatment was provided (Levin et al., 2020). This study differed from others in the literature because of the hospital's patient population of Hispanics and Latinos, non-Hispanics, African Americans or Blacks, Asians, Whites, and multiethnic patients of different ages. The fact that the study was conducted at a central Queens hospital made it distinct because of the hospital's diverse patient population (Mallapaty, 2020). The study aimed to investigate the connection between various treatment modalities on outcomes for patients with COVID-19 at a specific medical facility located in Queens.

Research Questions and Hypotheses

The following research questions were used to explore the relationship between ethnicity and treatment modality, which is the dependent variable in RQ1 and RQ2, and between ethnicity and mortality in RQ3.

RQ 1: Is there an association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

$H_0$1: There is no association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a1: There is an association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

RQ 2: Is there an association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

$H_0$2: There is no association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a2: There is an association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

RQ 1 and RQ 2 examined the association between treatment modality used and ethnic minority status controlling for age, gender, comorbidities, and hospital floor level where COVID-19-positive patients were treated. The predictor or explanatory independent variable was ethnic minority status. The modality used to treat COVID-19-positive patients with symptoms included mechanical ventilation and medication, such as remdesivir, and the outcome was either patient survival or death in the hospital. Patients admitted to the emergency department of the hospital had clinical manifestations of COVID-19.

RQ 3: Is there an association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

$H_0$3: There is no association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a3: There is an association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

RQ 3 was designed to examine the correlation between deaths of COVID-19-positive patients and ethnic minority status controlling for age, gender, comorbidities, and hospital floor level where the COVID-19-positive patient was treated. The covariates were age, gender, comorbidities, and hospital floor level where COVID-19-positive patients were treated, and the predictor or explanatory independent variable was ethnic minority status.

Theoretical Framework for the Study

This study was grounded in the health belief model (HBM), which is used to examine in-hospital patient care. The positive COVID-19 patient was given information about the effectiveness of giving a specific type of medication and the use of a ventilator to decrease their risk of illness (Kahaleh & Truong, 2021). This framework had the advantage of predicting whether a COVID-19 positive patient would need a medication to treat the signs and symptoms of the disease and ventilatory support to assist with breathing at a hospital during a pandemic. The model predicts the behaviors that individuals with COVID-19 had to engage in to protect others from the disease (Syed et al., 2021). The HBM focused on the susceptibility and severity of the disease, where COVID-19 patients with comorbidities were more at risk for the disease, and the disease was more severe for COVID-19 patients on the different hospital floor levels. The theoretical framework also focused on patient care and taking preventive measures to avoid the worst health outcomes (Nadarajan et al., 2020). The HBM improved the planning process for a future epidemic for older patients without compromising the care of the patient population that a hospital was currently serving (Kalhaleh & Truong, 2021). The HBM helped establish treatment modalities like the use of medications that were safe and effective in decreasing the viral load, managing the disease and reducing the severity of patient's conditions (Dai & Gao, 2021). The model aided clinicians in making better treatment decisions for a patient, and therapeutic optimization was essential in improving patient outcomes (Zuo et al., 2021).

The HBM is based on six constructs: risk susceptibility, risk severity, benefits to action, barriers to action, self-efficacy, and cues to action (Alagili & Bamashmous, 2021). In general, the six primary constructs of HBM helped older people during the COVID-19 crisis to adopt and practice COVID-19 preventive behaviors. The six constructs of HBM were used to provide care to a COVID-19-positive patient at the central Queens hospital (Mirzaei et al., 2021). The patient considered having COVID-19 as a serious problem and sought the care of a healthcare provider who treated the COVID-19 positive patient based on the severity of the disease on the various hospital floor levels. When a person was infected with COVID-19, they considered it a major threat to their well-being (Mirzaei et al., 2021). By following the six HBM constructs, the COVID-19-positive patient engaged in behaviors with their healthcare provider that prevented the medical condition and complications of COVID-19 (Karimy et al., 2021). The health care provider asked the COVID-19-positive patient questions based on the HBM constructs that improved their level of care (Karimy et al., 2021).

The connections between the HBM theoretical framework and the nature of the study included a multidisciplinary approach to improved risk communication where age and existing health conditions are two primary factors which contributed to COVID-19 deaths (Parajuli et al., 2020). The HBM incorporated risk factors, such as age, gender, comorbidities, length of hospital stay, and hospital floor levels when examining coronavirus cases (Bechard et al., 2021). The model can also be used to examine older adult’s disease severity and mortality to determine how susceptibility and exposure to the disease varied by age group as well as demographic characteristics of individuals, such as age, gender, and ethnicity (Bechard et al., 2021). Moreover, the model was used to assess the risk of being hospitalized when the COVID-19 positive patient had 1 or more underlying medical conditions. The model also was used to decrease the spread of the disease by implementing infection prevention and control measures when a patient was on mechanical ventilation (Bechard et al., 2021). Thus, the HBM helped evaluate a patient’s risk by undertaking a health assessment within a distinct geographic area (Parajuli et al., 2020). Moreover, the theory can help explain the overall risk and transmission of the virus throughout the population as people came into contact with an infectious person (Parajuli et al., 2020). When a COVID-19 patient is infectious they could be put on a ventilator to keep them alive when their fighting off an infection (Bechard et al., 2021). The HBM acknowledged that people had concerns about COVID-19 infections, hospitalizations, and death (Bechard et al., 2021). The model was a way to aid people in understanding their risk for the disease if they had certain risk factors.

Nature of the Study

To investigate the research questions, I used a cross-sectional approach, examining the association between the demographic factors and other factors that affected the choice of treatment and mortality of COVID-19-positive patients at a central Queens hospital. The COVID-19-positive patients were identified using a polymerase chain reaction (PCR) method (Wolfel et al., 2020). All patients diagnosed with COVID-19 were admitted to the emergency department of the hospital in Forest Hills. Only the hospitalized patients were included in the study.

The existing secondary data were obtained from the patients' electronic medical records by performing a chart review. A list of all COVID-19-positive patients was provided to me, and the discharge summary of the medical chart included all the information needed to create a dataset for each COVID-19-positive patient. With or without symptoms, the patient still tested positive. The patients ranged from young to middle-aged and older adults with underlying diseases. The study period was from January 1, 2020, to January 1, 2021, which was the peak and beginning months of the COVID-19 crisis (LoGiudice et al., 2020). Clinicians communicated with the patients to determine whether they had symptoms. Critically ill patients were admitted through the hospital’s emergency department to the ICU (Popovich & Parshina-Kottas, 2020).

The research questions related to the association between treatment modalities for patients with COVID-19 at the studied hospital and patient age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated (Thompson, 2021). Treatments received by patients with COVID-19 included being placed on a ventilator and taking medication, such as remdesivir (Malik et al., 2020). The mediator was the treatments received by the COVID-19-positive patients. The type of care given affected a patient’s likelihood of surviving or dying in the hospital. Discharged patients were presumed to have recovered sufficiently to not require in-patient care. Patient age, gender, and ethnicity were categorical factors that made the research quantitative. The length of hospital stay was a categorical and continuous variable that included several values within a specified range.

Definitions

The term “race” was not used in this study because of many different ethnic backgrounds. The main independent variable for the present study was ethnicity, which depended on how people identified themselves during hospital admission. A person’s emotional or subjective evaluation of themselves as one ethnicity or minority did not necessarily qualify them as such. The odds that someone living in central Queens going to a nearby Queens hospital was purely White or African American or Black was low. At this hospital, White people might be a minority and thus did not represent a true cross section of the United States.

Assumptions

I conducted the study under the assumption that no effective treatments were available for the virus and that most therapies did not improve patient outcomes (Sanders et al., 2020). Furthermore, health providers needed more clinical evidence to devise medical treatments for infected people. Promising medications were tested in clinical trials; however, current treatments were not beneficial to patients with COVID-19 (Sanders et al., 2020). Treatment modalities for COVID-19 were meaningful to this study because the treatment received by a particular patient could either decrease or prolong hospital stay. Regardless of the treatment modality used to manage patients with COVID-19, they either survived or died at the central Queens hospital (Richardson et al., 2020). The health care system in the State of New York considered in the study had a minimal risk to patients. The data were collected at this hospital because it was located in an area with a high number of COVID-19 cases (Richardson et al., 2020). Patients of various ethnicities and different ages were admitted to the hospital with multiple comorbidities. Some were discharged alive, whereas others died in the central Queens medical facility (Richardson et al., 2020). Patient survival depended on treatment, which was determined by several factors, including laboratory results (Richardson et al., 2020). The specific treatments given to patients differed depending on their symptoms and comorbidities. This research was one of the first studies conducted on COVID-19-positive patients at a hospital in a New York City area (Richardson et al., 2020).

Scope and Delimitations

This study focused on the independent and dependent variables connected to treatments provided to patients with COVID-19. Although the study had a large sample size, the research results could not be generalized to the overall population of patients with COVID-19 because the data were obtained from a hospital located in only one state, and the sample was convenient and not representative (see Alsiri et al., 2021). Patients excluded from the study were those with psychological or mental health problems, which could affect the study's external validity by not representing the full population (Alsiri et al., 2021). The independent variables in the study, age, gender, ethnicity, comorbidities, and hospital floor level where COVID-19-positive patients were treated, and the dependent variable, which was patient survival, might help explain the various treatments that patients with COVID-19 received (Richardson et al., 2020). Length of hospital stay was the predictor or explanatory independent variable, measured in days, and vital to the study because of its connection to whether a specific treatment improved a patient's outcome, ultimately determining whether the patient survived or died in the hospital (Richardson et al., 2020). Finally, the study involved no human-to-human interaction; therefore, no differences were directly caused by the treatment administered to the patients with COVID-19 in and of itself (Alsiri et al., 2021).

Limitations

The study required an institutional review board (IRB) application and a user and confidentiality agreement to access the secondary database. Because this study was the first to investigate the treatment approach based on several risk factors of COVID-19 at a specific central Queens medical facility (Kaufman, 2020), detailed clinical information on all patients might not be available, and additional studies might be needed to generalize the results of this study to the overall population of patients with COVID-19. Potential false positives were found when testing patients for COVID-19 using a nasopharyngeal swab and the PCR method (Wolfel et al., 2020).

Furthermore, some people with an increased risk for the virus were not tested because of a lack of medical insurance to cover the cost of the test (Woolhandler & Himmelstein, 2020). Other factors besides age, gender, ethnicity, comorbidities, treatment received, length of stay, and hospital floor level where COVID-19-positive patients were treated affected patient outcomes. One factor that was not examined was whether traveling to an international destination affected the likelihood of testing positive for the virus (Abdullah et al., 2020). As a final point, the study did not capture the entire duration of the coronavirus crisis.

The study had a selection bias because the study population consisted primarily of ethnic minorities, who made up the largest proportion of those admitted to the central Queens hospital (Kozyrkov, 2020). Given that White individuals were a minority of this hospital's patient population, a selection bias did not represent a cross section of the United States in terms of majority and minority status (Kozyrkov, 2020). The study's covariates—age, gender, comorbidities, and hospital floor level where COVID-19-positive patients were treated—and the predictor or explanatory independent variable, which was the length of hospital stay, helped mitigate selection bias; however, bias still made it difficult for the study results to be generalized to the overall population because of a lack of randomization (Kozyrkov, 2020). The research also had a design bias because the investigation was cross sectional and did not capture every phase of the coronavirus crisis, which of course was ongoing; therefore, the study's findings could be misleading if they were not applied with appropriate caution. The study had response bias because non-Caucasians might respond to the treatment modalities, which they received differently in contrast to Caucasians. The study could also have measurement bias because only COVID-19-positive patients or those who encountered an infectious person were admitted to the central Queens hospital for treatment (Kozyrkov, 2020).

Significance

This study provides significant information on why a central Queens hospital was a distinct, densely populated, urban location for research treatment outcomes based on risk factors, such as age, gender, ethnicity, and comorbidities (Sultan et al., 2020). The length of hospital stay was vital to determine how well the treatments helped patients. The treatment that a patient received largely dictated the length of hospital stay. The better the treatment, the less time a patient spent in the medical facility (Sultan et al., 2020). If a patient's symptoms improved sufficiently, he or she was eventually released from the hospital instead of dying in the medical facility (Sultan et al., 2020).

The central Queens hospital was a COVID-19 hotspot with relative temporal increases in the number of cases (Hu, 2020). Even though the hospital did not have a slight increase in admissions related to COVID-19, it is part of a wider system of several hospitals. Therefore, it had a surge capacity, which referred to situations when the number of cases exceeded the volume of patients that a given medical facility could hold

(Hu, 2020). When the number of patients who tested positive for coronavirus was high, the patients were sent to other hospitals within the health system (Hu, 2020). The patient population was dynamic because it comprised diverse people, such as non-Hispanics, Hispanics and Latinos, African Americans or Blacks, Asians, and multiethnic individuals (Sultan et al., 2020). Other than the coronavirus infection, many patients had underlying health conditions, including heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and deep venous thrombosis [DVT]), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, chronic obstructive pulmonary disease [COPD], coronary artery disease [CAD], anemia, and asthma (Sultan et al., 2020).

Summary

No targeted therapies were currently available for COVID-19-positive patients except for critically ill patients with severe diseases who needed symptomatic treatments (Shang et al., 2020). The available treatment modalities were essential for managing patients with COVID-19 and had to be administered in accordance with established treatment guidelines by qualified healthcare professionals (CDC, 2020). Many hospitalized patients required a ventilator for breathing support. If successful, a patient's treatment slowed the progression of the disease, especially for patients at high risk for the illness (CDC, 2020). Though research studies to test the effectiveness of novel therapeutics were ongoing, treating a patient with COVID-19 decreased disease severity and allowed them to be safely monitored (CDC, 2020). The two primary treatment modalities for COVID-19-positive patients were medications and mechanical ventilation, and these interventions prevented additional infections and helped control the virus (Zuo et al., 2021). In the study there was no statistically significant difference among the treatment modalities that were given from one ethnic group to another, and that makes central Queens Hospital unique from other hospitals across the United States. Chapter 2 discusses the literature relevant to COVID-19 disease severity in terms of the variables that were investigated.

Chapter 2: Literature Review

The care patients received during hospitalization at the central Queens hospital and the challenges faced by health care professionals when treating patients with COVID-19 should be considered when determining patient outcomes (Marcello et al., 2020). The gap in the literature was related with the treatment modalities used to treat patients with COVID-19 based on risk factors, including age, gender, ethnicity, and underlying health problems (Vaughan et al., 2021). People of minority backgrounds with comorbid medical conditions were at an increased risk of having coronavirus based on the experience of a hospital in Forest Hills, Queens, which was affected by the pandemic (Marcello et al., 2020). When caring for patients with COVID-19, independent risk factors that should be considered included age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated. The reason why this urban patient population was distinctive in terms of managing and treating critically ill patients during the COVID-19 pandemic remained unknown (Marcello et al., 2020).

This chapter provides a review of the relevant literature. It begins with the literature search strategy. It then discusses why COVID-19 was a problem in New York City in 2020. It then explains the impact of the different variables in the study—age, gender, comorbidities, length of hospital stay, hospital floor level where COVID-19-positive patients were managed for the disease, and treatment received on disease severity. Finally, the literature review addresses the mortality rate among people hospitalized for the disease.

Literature Search Strategy

The databases searched for the literature review were PubMed, Medline, ProQuest Central, and Google Scholar (Lazarus et al., 2020). The keywords and databases searched had risk factors for coronavirus: *age*, *gender*, *ethnicity*, and *comorbid medical conditions*, such as *heart disease*, *diabetes*, *hypertension*, *obesity*, *hyperlipidemia*, *clotting disorders* (e.g., pulmonary embolism and DVT), *atrial fibrillation*, *pneumonia*, *respiratory failure*, *dyspnea*, *kidney disease*, *COPD*, *CAD*, *anemia*, and *asthma*. Other search terms were *in-patient treatment received*, *length of hospital stay*, and geographic delimiters, such as *central Queens hospital* and other medical facilities that provided care to patients infected with coronavirus. The search included journal articles written in English published between 2017 and 2022 because an abundant amount of literature regarding differences in health outcomes and possible and proven connections to ethnicity was available. Most studies were quantitative.

I conducted a PubMed search to find articles that addressed the laboratory diagnosis of patients with COVID-19. The search excluded imaging studies. I also explored the methodology of current Food and Drug Administration (FDA)-approved tests relevant to the pandemic (Bastola et al., 2020). Only laboratory tests were reviewed, which were decisive in determining the number of new and existing COVID-19 cases. Some routinely used tests for COVID-19 had questionable performance characteristics (Bastola et al., 2020). The search for publications had to be highly specific to limit the number of returned articles focusing on testing methods.

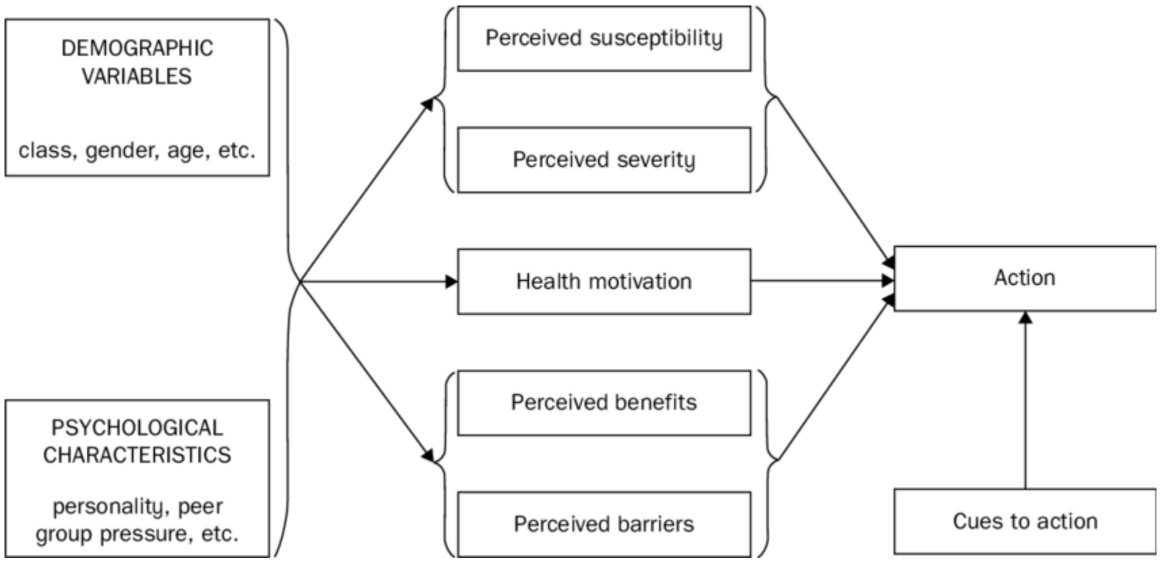
Theoretical Foundation

The theoretical framework that grounded this study was the HBM, which helped evaluate risk factors and assess the risk perceptions of the virus on preventive health behaviors (Kamran et al., 2021). The HBM suggested that all COVID-19 positive patients receive the same treatment modality. However, no effective treatments were available for patients with COVID-19, considering factors, such as the patient's age, gender, comorbidities, and ethnicity (Mirzaei et al., 2021). Furthermore, given that no definitive treatments were available for the disease, taking control measures was essential for the young and adult population of patients with COVID-19 (Mirzaei et al., 2021). The HBM considered age differences, where middle-aged and older adults had a high risk for hospitalization and dying from the disease (Bechard et al., 2021). Therefore, in the emergency department and the ICU, patients with COVID-19 had to be carefully monitored to avoid death. If a patient had a comorbid medical condition that could cause the failure of vital body organs, such as heart disease, diabetes, or chronic kidney disease, this factor increased the intensity of coronavirus symptoms (Kamran et al., 2021). The HBM indicated the factors that motivated patients with COVID-19 to seek treatment for the clinical manifestations of the medical condition (Kamran et al., 2021).

The HBM is a model of analysis to explore six dimensions. These dimensions are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, health motivation, and cues to action (Syed et al., 2021). See Figure 1 for an illustration of the HBM.

Figure 1

Health Belief Model



Note. Adopted from Abraham and Sheeran (2015). The Health Belief Model.

The constructs of the HBM were used to recommend health behaviors that prevented COVID-19 infections and decreased the transmission of the disease through the use of antiviral drugs like remdesivir and paxlovid (Bechard et al., 2021). Furthermore, the HBM includes factors that moderate the relationship between each of the six constructs of the model. One such moderator was the age of the infected individual (Bechard et al., 2021). The influence of the disease on various age groups who exhibited certain health behaviors had a greater effect on older adults than adolescent. When the six health behavior measures were adopted, they helped in making decisions to manage the COVID-19 pandemic response by the implementation of treatment modalities like medications and ventilatory support to decrease the spread of the virus (Bechard et al., 2021).

The six constructs of the HBM could be applied when the health care provider provided care to a COVID-19-positive patient at a central Queens hospital. The HBM revealed any known differences observed in treatment modalities or differences in outcomes, and this feature was examined through the lens of the HBM, which posited the six tenets that drive a health outcome (Shahnazi et al., 2020). The behaviors that were checked was that of the health care provider. For the HBM, knowing whether the treatments that the healthcare provider gave to the COVID-19-positive patient differed and determining what led the health care provider to treat patients differently based on their perceptions were necessary.

Based on perceived susceptibility, the health care provider believed that the COVID-19-positive patient was susceptible to death; therefore, they gave the patient a more rigorous treatment than other patients.(Kim & Kim, 2020). The patients with comorbidities were more likely to go to the hospital, were more susceptible to having the disease and had the worse health outcomes (Kim & Kim, 2020). For perceived benefits, the health care provider would believe that all;COVID-19 positive patients should receive the same treatment modality (Kim & Kim, 2020). In perceived severity, the COVID-19 positive patients were treated on the different floors of the hospital based on the severity of the disease. In cues to action, the COVID-19-positive patient exhibited behaviors based on the recommended treatments set by their healthcare provider. The COVID-19 positive patients were given information about how to stay healthy after going through the disease (Kim & Kim, 2020). Perceived barriers occurred when the COVID-19-positive patient length of stay in the hospital differed and might have been an obstacle when it came to the treatment modality given by their health care provider. For example, a patient who had a long length of stay had severe signs and symptoms of the disease (Kim & Kim, 2020). Finally, in self-efficacy, the COVID-19-positive patient had to comply with the treatment recommendations of their health care provider to improve health outcomes and was given information on how to protect others from the disease (Kim & Kim, 2020). In brief, by applying all six constructs, the health care provider gave the COVID-19-positive patients safe and effective treatment interventions. However, the health care professionals had different health preventive behaviors in treating COVID-19-positive patients based on their self-reported health condition.

A Review of the Literature

Much of the literature discussed what was known about COVID-19, such as the connection between mortality rates and vulnerability based on certain risk factors (Vaughan et al., 2021). Risk factors, such as age, gender, ethnicity, and comorbidities, were well established. However, male gender, non-White ethnicity, low educational attainment, and income for the virus-positive individuals were factors that needed further research (Vaughan et al., 2021). Whether a given patient's risk factors contributed to the persistence of symptoms and whether treatment decreased the duration of post-COVID-19 clinical manifestations remained unknown (Miyazato et al., 2020). The risk factors associated with death rate were older age, male gender, and individual medical history, as evaluated during patient admission and discharge in the hospital. The kind of treatment that the patient received also influenced their length of stay in the medical facility (Vaughan et al., 2021).

Some research reported uncertainties regarding the heterogeneity of the population and health inequalities (Vaughan et al., 2021). The treatment that a patient received affected disease progression. However, hospital-based treatment modality data were difficult to obtain and confounded or even biased the study results. Whether the treatment modalities used to care for patients with COVID-19 were affected by certain risk factors remained unknown (Marcello et al., 2020).

Ethnic Minority Populations in New York City

Ethnic minorities living in New York City had disproportionally higher rates of hospitalization than White individuals (Ogedegbe et al., 2020). New York City was the hardest hit area by COVID-19 in the United States, with over 231,824 reported cases and 19,153 deaths since January 1, 2021 (Ogedegbe et al., 2020). The increased risk for the disease was connected with crowded living areas and not following social distancing rules. People of color had a difficult time following social distancing rules due to social inequalities and were highly likely to live in low socioeconomic status neighborhoods (Ogedegbe et al., 2020). Disadvantaged people were apt to engage in occupations where they cannot work remotely (Ogedegbe et al., 2020). Furthermore, some ethnic minorities had a hard time accessing medical care in low-resource settings. All these factors contributed to poor health outcomes and high mortality rates (Ogedegbe et al., 2020).

Moreover, ethnic minorities in New York City lived with medical conditions, which included cardiovascular disease, hypertension, diabetes, obesity, and chronic kidney disease, making it hard for them to carry out activities of daily living. Thus, the high hospitalization rates for African Americans or Blacks and Hispanics living in New

York City were due to poverty, high population density, and low educational attainment (Ogedegbe et al., 2020). Living in neighborhoods where individuals had lower socioeconomic status contributed to the likelihood of being hospitalized (Ogedegbe et al., 2020). One study reported that ethnic minority patients had a much higher disease severity than White patients (Ogedegbe et al., 2020). The higher rate of COVID-19-related mortality was due to the fact that African American or Black and Hispanic patients were likelier to contract the illness in the first place (Ogedegbe et al., 2020). African American or Black populations usually had no health insurance, which was why they might try to avoid hospitalization or otherwise treatment in a medical facility (Ogedegbe et al., 2020). Finally, the study supported the assertion that inequalities in housing conditions, access to medical care, employment in certain occupations, and poverty were all key factors in African American or Black and Hispanic communities. These issues should be addressed to improve outcomes in disease severity from a medical perspective (Ogedegbe et al., 2020).

Multigenerational Households and COVID-19

Multigenerational households and overcrowded family dwellings were common in New York City (Ghosh et al., 2021). Independent risk factors were difficult to measure when COVID-19 was suspected because of the high number of known COVID-19 cases, which increased the transmission of the disease. The role of overcrowding and household makeup was poorly understood in the spread and diagnosis of COVID-19 (Ghosh et al., 2021). Some people living in multigenerational households developed severe forms of the disease because of decreased personal space. Individuals in overcrowded households had an elevated risk for COVID-19 due to the increased likelihood of exposure. Overcrowding contributed to the increased severity of the disease (Ghosh et al., 2021). Many COVID-19 cases from multigenerational households were admitted to emergency departments throughout New York City since the early phases of the pandemic. Most multigenerational households had family members with essential but low-income jobs, and most people lived in poverty (Ghosh et al., 2021).

Great population density was associated with a rise in suspected COVID-19 cases (Ghosh et al., 2021). Overcrowding increased the risk of coming into contact with a person with COVID-19. The role of multigenerational households in increasing the disease severity placed older people at risk for the disease (Ghosh et al., 2021). Differences in ethnicity were considered when discussing multigenerational households and suspected COVID-19 cases not only in New York City but also in other areas of the United States (Ghosh et al., 2021). Sociodemographic risk factors affected multigenerational households. Being in a home with three or more generations influenced the spread of the disease, which disproportionately affected minority groups, who were highly likely to live in close quarters. A person's age, gender, education, and ethnicity also helped explain disparities in the number of new COVID-19 cases (Ghosh et al., 2021).

Age, Gender, and COVID-19 Disease Severity

Some groups of people were highly susceptible to COVID-19 (Hu et al., 2021). Age and gender differences in patients with COVID-19 were found, which influenced treatment modality (Kopel et al., 2020). Gender-related differences were observed in

COVID-19 in people over 65 years old, where the condition had a higher prevalence in males than in females. Younger adults rarely died from the disease; however, the mortality risk for COVID-19 increased with age (Mallapaty, 2020). The evidence indicated that certain age groups were likely to spread the disease, which affected the prevalence of the virus (Mallapaty, 2020). Patient age could be connected to the treatment an infected person received (Kopel et al., 2020). Some adults were highly vulnerable, especially older adults who had COVID-19 with multiple comorbidities (Kopel et al., 2020). Further, gender differences existed in vulnerability and the number of people infected by and treated for the virus. The research investigated the epidemic characteristics of the disease and why men received strict clinical treatment for coronavirus infection at a hospital (Hu et al., 2021).

Treatment of Ethnic Minorities with Comorbidities and COVID-19 Disease Severity

Patients with comorbidities were highly prone to become ill after contracting COVID-19 (Clay et al., 2021). These conditions included heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma. However, information on how people of different ethnicities responded to treatment were lacking (Clay et al., 2021). In general, non-Hispanic Blacks and non-Hispanic Whites had a higher probability of displaying COVID-19 symptoms than Hispanics. Ethnicity and COVID-19 severity determined treatment modality (Clay et al., 2021).

Children susceptible to COVID-19 had an increased risk for poor outcomes depending on the treatment given (Moreira et al., 2021). Being an African American or Black or of mixed ethnicity and having comorbidities were closely connected to an individual's chance of hospital admission. The number of deaths in children with COVID-19 and underlying medical conditions differed by treatment modality (Moreira et al., 2021).

Length of Stay and COVID-19 Disease Severity

According to the CDC, coronavirus was a severe disease, and patients had complications that required continuous care at a hospital (Lavery et al., 2020). After a COVID-19 infection, patients were discharged from a medical facility, readmission was always a possibility, and a return to the hospital was usually associated with the presence of chronic conditions. Furthermore, a patient's length of stay in the hospital affected the number of hospital beds that accommodated patients with COVID-19 (Lavery et al., 2020). The length of stay in the hospital, which was primarily determined by the severity of the disease, was also affected by risk factors, such as a patient's age, gender, ethnicity, the presence of underlying health conditions, and whether the infection was acute or chronic (Lavery et al., 2020). In summary, patients older than 65 of Black and Hispanic ethnicity, of the female gender, presented with chronic obstructive pulmonary disease, heart failure, diabetes, obesity, and chronic kidney disease, and previously hospitalized had the longest hospital stays (Lavery et al., 2020). Severe COVID-19 cases were transferred to the ICU and placed on a ventilator, which influenced their hospital stay. If a person's length of stay was short, it meant that his or her symptoms lessened, making discharge a suitable option (Lavery et al., 2020). By contrast, a lengthy patient stay might indicate that the treatment might not have helped with severe clinical manifestations (Lavery et al., 2020). Finally, the impact of disease severity on a patient's length of hospitalization was a heavily studied topic.

Impact of Treatment on Hospitalizations

Ethnicity and clinical outcomes among hospitalized patients with COVID-19 patients were associated (Sze et al., 2020). African American or Black and Asian patients had the worst health outcomes based on the type of treatment that they received. The treatment modality that ethnic minorities got were medications or mechanical ventilation. The reason why ethnic minorities had poor health outcomes was because of their higher disease prevalence than White individuals infected by COVID-19 (Sze et al., 2020). A need-based treatment approach was essential at a central Queens hospital to decrease the morbidity and mortality rates among ethnic minorities based on the level of care that they needed (Sze et al., 2020).

Abundant evidence showed that not all people infected with COVID-19 should be hospitalized (Popovich & Parshina-Kottas, 2020). Older people and those with existing medical conditions had the highest risk of contracting the virus. Patients with breathing problems and the elderly who required critical care were most often admitted to the ICU. These patients often required ventilation to assist with their ability to breathe (Popovich & Parshina-Kottas, 2020).

Ethnicity and underlying health problems predicted whether a person with COVID-19 was hospitalized (Vaughan et al., 2021). The severity of the disease was high among ethnic minorities admitted to a medical facility. Having cardiovascular disease, kidney disease, asthma, gastrointestinal symptoms, and hypertension made a person highly vulnerable to effects of the disease (Vaughan et al., 2021). Patients with comorbidities should be focused on because they were likely to be hospitalized. Certain socio-demographic factors were associated with an increase in disease severity; however, information on why ethnic disparities influenced the prevalence of COVID-19 cases in a hospital's emergency department were lacking (Vaughan et al., 2021).

Ethnic disparities in COVID-19 hospitalizations in a particular area were carefully examined (Wadhera et al., 2020). Health inequities due to ethnic differences among patients with the virus were documented (Wadhera et al., 2020). A patient population with a high proportion of ethnic minorities increased hospital admissions because disadvantaged people lived in poverty and had low education levels (Wadhera et al., 2020). Underlying comorbid medical illnesses were also a concern and helped explain patient outcomes among individuals living across the New York City area.

Contribution of Treatments to Mortality Rates

Minority groups treated for COVID-19 had high mortality rates (Bassett et al., 2021). Age-specific COVID-19 death rate variations by ethnicity were also observed. An individual's age and ethnicity affected the number of years lost due to COVID-19. People of color receiving treatment died at a younger age from the disease than the non-Hispanic White population (Bassett et al., 2021).

The increased mortality rate for patients with COVID-19 was related with the type of treatment offered by medical professionals (Biswas et al., 2021). No clear evidence was found as to why age, gender, and comorbidities influenced the number of people dying from the disease. These risk factors were essential because they were evaluated in patients with underlying medical conditions. Adequate protection and interventions were necessary for patients infected by the virus admitted to a medical facility (Biswas et al., 2021).

The treatments that patients received contributed to the overall mortality rate, and as people got older, they had a greater need to be treated for the disease because they were at greater risk for death (Levin et al., 2020). Mitigation strategies essential in decreasing the number of older adults infected with the virus were established, which helped reduce the death rate (Levin et al., 2020).

Use of Mechanical Ventilation and COVID-19 Disease Severity

In the United States, 65% of patients who received mechanical ventilation did not survive, and the mortality rate for mechanically ventilated patients was 88%. The statistics indicated that approximately 20.2% of patients who received this intervention died (Wunsch, 2020). The healthcare provider decided if a patient should be ventilated because of breathing difficulty (Wunsch, 2020).

Mechanical ventilation could also be affected by cultural norms because ventilation was considered an invasive life-supporting therapy (Wunsch, 2020). Some patients preferred not to receive mechanical ventilation because of their age, underlying health conditions, or personal choice (Wunsch, 2020). For the most part, mechanical ventilation was used in hospitalized patients and required an early intubation strategy. Patients were placed on mechanical ventilation usually received it for a prolonged period and required follow-up to determine the effectiveness of the treatment (Wunsch, 2020). Using mechanical ventilation for patients with COVID-19 seemed universal and was used to save lives. The intervention decreased the mortality rate regardless of a person's age and different comorbidities. The benefits of mechanical ventilation differed across age groups, and the decision to ventilate a patient, as well as its patient outcomes, remained unclear (Wunsch, 2020).

Medications and COVID-19 Disease Severity

The medications used to treat coronavirus at hospitals in the United States were ineffective (Sanders et al., 2020). However, many people infected with the virus needed immediate care not to suffer the worst effects of the illness. Furthermore, some promising therapies did not work because they targeted the virus and had not been approved by the United States FDA (Sanders et al., 2020). Consequently, some medications were potent but had not been proven to be clinically effective. No supporting evidence was available that these medications improved patient outcomes. Some were prophylactic; however, data to prove that they worked for a person suspected of having or confirmed to have COVID-19 were lacking (Sanders et al., 2020).

The FDA had not approved the use of either hydroxychloroquine, chloroquine, or ivermectin for treating or preventing COVID-19 in humans (Patrì & Fabbrocini, 2020). All three drugs were FDA approved for other diseases and were taken safely as directed by a doctor. Neither drug was an anti-viral medication (Patrì & Fabbrocini, 2020). Hydroxychloroquine and chloroquine were used to treat malaria. Ivermectin was used to treat worm infections. The three medications were not effective in clinical trials, and some people thought they might be beneficial. However, in summary, they were dangerous and exhibited no overall benefit. The drugs should not be used for the general population of patients with COVID-19 at a central Queens hospital (Patrì & Fabbrocini, 2020).

At the central Queens hospital, the drug hydroxychloroquine was used in the early phases of the pandemic for emergency use authorization to treat patients with COVID-19 (Sanders et al., 2020). The hospital started using the medication before October 22, 2020; however, the drug was revoked by the FDA on June 15, 2020. The medication was given at a dose of 400 mg every 12 h for 1 day, followed by 200 mg every 12 h for 5 days for patients with mild to severe COVID-19 (Yazdany & Kim, 2020). In the early stages of the COVID-19 crisis, the medication slowed the progression of the disease and was used as the standard treatment to help individuals overcome the symptoms of the virus (Sanders et al., 2020). However, the medication was well tolerated, but using hydroxychloroquine exhibited dangers (Yazdany & Kim, 2020). High-quality research data showed that the use of hydroxychloroquine and chloroquine to treat COVID-19 could be harmful and had no medical benefit (Yazdany & Kim, 2020). In fact, the FDA has revoked the emergency use authorization for hydroxychloroquine and chloroquine in patients with COVID-19 based on their dangers and because it did not help people recover rapidly (Yazdany & Kim, 2020). Hydroxychloroquine and chloroquine were not taken for COVID-19 infection because it caused severe heart rhythm abnormalities, severe liver inflammation, and kidney failure. Although hydroxychloroquine and chloroquine prolonged a patient’s survival, the drugs had life-threatening manifestations and were not taken outside of the hospital (Yazdany & Kim, 2020).

Ivermectin was an anti-parasitic drug, and at the start of the COVID-19 pandemic, this medication was used for the treatment and prevention of COVID-19 infections (Bryant et al., 2021). The medication was administered to some COVID-19-positive patients from March 2020 to August 2020 at a dose of 6 mg for 4 days for patients with mild to severe forms of the illness (Bryant et al., 2021). The FDA stopped the use of the drug on August 26, 2020, because of the severe illness associated with ivermectin use to prevent or treat COVID-19 (Bryant et al., 2021). The drug had a strong therapeutic efficacy to combat the virus and decreased the number of people dying from COVID-19 by 62% (Bryant et al., 2021). In some unpublished reports in other countries (e.g., Egypt, India, Iran, and Iraq), ivermectin improved the outcomes for patients with COVID-19; however, these reports were not scientific studies (Bryant et al., 2021). Multiple studies published on ivermectin had been subsequently retracted when they were found to be based on falsified data or errors in analysis and were misleading. Adequate clinical trials that prove the effectiveness of ivermectin in treating or preventing COVID-19 had not been performed (Bryant et al., 2021). Current evidence that recommends ivermectin as a COVID-19 treatment remained insufficient. Clinical trials that evaluate the effectiveness of ivermectin as a COVID-19 treatment were ongoing (Bryant et al., 2021). Taking large doses of ivermectin or doses intended for animals was dangerous; this resulted in overdose, causing severe harm, including nausea, vomiting, diarrhea, low blood pressure, dizziness, balance problems, seizures, coma, and even death (Molento, 2021). Ivermectin caused birth defects if taken early in pregnancy. Dosages intended for animals might contain ingredients not meant for human consumption, and the effects of these ingredients in humans had not yet been studied (Molento, 2021).

The currently used drug remdesivir was the first anti-viral drug approved by the FDA for treatment of hospitalized adults and pediatric patients over the age of 12 years with COVID-19 (Beigel et al., 2020). The drug was initially given to COVID-19-positive patients at the central Queens hospital when it was approved by the FDA on October 22, 2020 (Beigel et al., 2020). Before using the medication remdesivir, the hospital located in Forest Hills, Queens, used a combination of hydroxychloroquine, chloroquine, steroids, and antibiotics for COVID-19 prophylaxis. Remdesivir was effective at a dose of 200 mg on day 1, followed by 100 mg on day 2 administered by intravenous infusion over 30 min to 120 min (Beigel et al., 2020). Research showed that some patients recovered rapidly after taking this medication. The drug inhibited Severe Acute Respiratory Syndrome (SARS)-CoV-1 and SARS-CoV-2 in vitro, decreasing lung damage (Beigel et al., 2020). Furthermore, the medication shortened a patient’s length of hospital stay. In a double-blind randomized control trial, the drug was better than a placebo group in the treatment of hospitalized patients (Beigel et al., 2020). When a patient was given remdesivir, their oxygen supply was assessed, and the need to provide respiratory support was reduced. The drug prevented the progression of the disease to severe respiratory disease (Beigel et al., 2020). Administering remdesivir for 5 days improved patient outcomes. The drug was first used on October 22, 2020, for the management of older adults and children with COVID-19, which was confirmed through laboratory testing. As a final point, when remdesivir was given in combination with another drug, it improved the patient's immune response and health status (Beigel et al., 2020).

Dexamethasone was used at the start of the pandemic for hospitalized patients with COVID-19 (Huang et al., 2022). In research studies, the medication decreased mortality within 28 days if taken at a dose of 6 mg once daily for up to 10 days (Huang et al., 2022). Furthermore, the incidence of death and the patient's length of hospital stay decreased in patients taking dexamethasone and receiving mechanical ventilation. Therefore, the medication increased the chance that the patient was discharged alive even if the patient had severe symptoms (Huang et al., 2022). Consequently, dexamethasone did not work for patients that did not require respiratory support. Dexamethasone caused side effects, such as hyperglycemia, secondary infections, psychiatric effects, and avascular necrosis (Huang et al., 2022). When dexamethasone was taken for 10 days, it increased the risk of reactivation of latent infections. Finally, the drug should be taken until the COVID-19-positive patient was released from the medical facility (Huang et al., 2022).

In the early stages of the COVID-19 pandemic, monoclonal antibodies were FDA approved for emergency use authorization to treat hospitalized patients with COVID-19 with a high risk of progression to severe disease (Abraham, 2022). The antibodies targeted the SARS-CoV-2 protein and decreased COVID-19-related hospitalizations and deaths (Abraham, 2022). Furthermore, monoclonal antibodies were used mainly in immunocompromised patients with a medical condition. Initially, the antibody-based drugs were taken at a dose of 150 mg but then increased to 300 mg by the FDA because the antibodies were not proven effective against most of the sub-variants of the severe disease (Abraham, 2022). The antibodies were administered primarily as pre-exposure prophylaxis of COVID-19.

Patients were administered intravenous infusions of monoclonal antibodies in emergency department medical facilities. The downside of monoclonal antibodies was that they caused allergic or non-allergic drug reactions (Lloyd et al., 2021). Some side effects of monoclonal antibody infusions included flushing, low blood pressure, pain, shortness of breath, itching, and soreness near the intravenous site (Lloyd et al., 2021). The benefit of monoclonal antibodies was primarily observed in high-risk overweight patients over 65 years with COVID-19 and a weak immune system (Lloyd et al., 2021). In general, monoclonal antibodies were given in combination with other medications to patients with COVID-19 at the hospital in Forest Hills, Queens.

In the central Queens hospital, convalescent plasma was not given to patients with COVID-19 as a treatment because it was not FDA approved. Still, it can be given at a high titer for emergency use authorization (Begin et al., 2021). High titer convalescent plasma was given in combination with monoclonal antibodies in hospitalized immunocompromised patients (Begin et al., 2021). Convalescent plasma was used in selected patients with COVID-19 for immunotherapy. For the most part, plasma transfusion was not beneficial as a treatment in hospitalized infected patients (Begin et al., 2021). Moreover, scientific studies reported a lack of consistency in its effectiveness in COVID-19-positive patients admitted to the hospital or presented to the emergency department (Begin et al., 2021).

Furthermore, the use of plasma as the standard of care for patients that should be intubated or had an increased chance of death was questioned (Begin et al., 2021). Severe adverse effects from receiving convalescent plasma included hypoxemia and respiratory failure. Transfusion had to be stopped if the patient experienced these side effects and risks. Studies revealed that the infusion of convalescent plasma might harm patients in an emergency room setting (Begin et al., 2021). In some elderly patients, the convalescent plasma caused high levels of viral neutralization and improved clinical outcomes. Nevertheless, the potential concern for harm for healthcare providers using convalescent plasma for patients with COVID-19 in a public health emergency was always present (Begin et al., 2021).

At the beginning of the pandemic, the central Queens hospital gave selected patients with COVID-19 an immunomodulator called tocilizumab, an interleukin 6 inhibitor combined with dexamethasone (Libassi, 2020). Although the drug was not FDA approved, the medication was given for emergency use authorization to hospitalized pediatric and adult patients with COVID-19. Based on randomized control trials, the immunomodulator showed mortality benefits and promise for selected populations of patients with COVID-19 (Chen et al., 2020). The drug was a monoclonal antibody that bound to interleukin 6 receptors and inhibited the signaling process mediated by these receptors (Libassi, 2020). Patients with difficulty breathing or wheezing, which required emergency care, were given this polytherapy.

Furthermore, healthcare providers administered the treatment to hospitalized patients with COVID-19 transferred from the emergency department to the ICU who required invasive or non-invasive mechanical ventilation or nasal cannula oxygen (Chen et al., 2020). An infusion dose of the immunomodulator was given to COVID-19-positive patients who required ventilator support within 24 hours (Libassi, 2020). The single intravenous dose depended on the weight of the COVID-19-positive patient and their clinical signs and symptoms (Chen et al., 2020). Finally, the interleukin 6 monoclonal antibody improved clinical outcomes in patients with severe COVID-19 infections.

Patients hospitalized and not hospitalized with COVID-19, where symptoms progress from mild to severe, were recommended to take antiviral medications (Ledford, 2021). The drugs that the FDA approved for emergency use authorization for treating patients with COVID-19 were paxlovid and molnupiravir (Ledford, 2021). Paxlovid was administered to pediatric and adult patients aged 12 years and older with a body weight of at least 88 pounds (Zenobia, 2022). Paxlovid was the antiviral medication option for hospitalized patients with COVID-19. In contrast, molnupiravir, was given to adult patients 18 years and older (Bernal et al., 2022). Molnupiravir was used as an alternative treatment for high-risk non-hospitalized patients with COVID-19 (Beasley, 2022). One medication, and the other, were helpful for COVID-19-positive patients confirmed by viral testing. The drugs were given shortly after symptom onset and when a diagnosis of COVID-19 was made. The drug paxlovid inhibited an enzyme needed to process viral proteins (Ledford, 2021). Molnupiravir caused mutations in the viral genome, which disrupted the replication of the virus, preventing its survival. Both drugs slowed the spread of the disease (Ledford, 2021). The antivirals had side effects. One of the significant side effects of taking the oral antiviral paxlovid was hepatic impairment

(Ledford, 2021). The adverse effects of taking molnupiravir included harm to the fetus during pregnancy, and the medication affected bone and cartilage growth in patients less than 18 years old (Zenobia, 2022). On the one hand, the drug paxlovid had drug–drug interactions because it was an inhibitor and substrate for CYP3A (Ledford, 2021). On the other hand, molnupiravir had no clinical drug interactions based on limited data from using the medication for emergency use authorization (Bernal et al., 2022). The two antiviral drugs decreased COVID-19-associated hospitalizations, non-hospitalizations, and deaths after the virus infected people. Further clinical trials that evaluate the ages and ethnicities of patients taking these antivirals and investigate the efficacy of both medications were necessary (Ledford, 2021).

Summary and Conclusions

In investigating health outcomes for patients with COVID-19 receiving different treatment modalities, ethnic disparities, which had not been adequately studied in the literature, merit further research, along with age, gender, and comorbidities (Bhala et al., 2020). Furthermore, people in certain ethnicities faced significantly increased risk of contracting COVID-19 due to socioeconomic disadvantage, which had also not been fully addressed in the literature (Bhala et al., 2020). These patients were most in need of treatment. However, ethnic disparities could only be considered when adjusting for patient age and self-reported health status (Bhala et al., 2020). More research was necessary to understand the occurrence of higher COVID-19 death rate among some ethnic groups compared with that in Whites (Bhala et al., 2020). Chapter 3 discussed the research methods used for the present study.

Chapter 3: Research Method

The COVID-19 pandemic has affected countries worldwide, with limited evidence on treatments to cure people with COVID-19, which led to disability and death (Ali et al., 2020). The present study sought to examine the body of information on the current treatment options for patients with COVID-19. Some patients had taken medications that responded to the illness; however, the clinical effects of these therapies were not promising (Ali et al., 2020). Consequently, new treatment modalities were being considered, with the primary goal of finding the treatment that offered the greatest benefits to the survival of patients with COVID-19 (Ali et al., 2020). The main treatment for coronavirus was remdesivir, and mechanical ventilation was a supportive respiratory treatment to help patients breathe (Ali et al., 2020). The overall aim of the present study was to determine the various treatment modalities that affected ethnic minority patients with COVID-19 in influencing their length of stay at a central Queens hospital. The length of hospital stay was a predictor or explanatory independent variable, and the mortality of the patient was a dependent outcome variable for the study.

This chapter describes the research design and method, study population, sample size, procedures for selecting participants, data collection procedure, instrumentation, and data analysis plan. In addition, issues of threats to the validity of the study and ethical procedures are presented. Finally, the study setting is described in detail.

Research Design and Rationale

The study adopted a quantitative approach to examine modalities based on outcomes and their relation to certain factors among patients with COVID-19

(Rinderknecht & Klopfenstein, 2021).The study involved a secondary dataset that was created by conducting a chart review at a hospital in Forest Hills, Queens, New York. The director of hospital information management provided access to the patients' electronic medical records. The director of the laboratory had a list of all COVID-19-positive patients. The data had to be anonymized by removing patient names and any other information that could be used to identify individual patients (Rinderknecht & Klopfenstein, 2021). Additionally, the university's IRB had to grant approval, and a user and confidentiality agreement was required to access the data (Rinderknecht & Klopfenstein, 2021). The patients' medical charts revealed the treatments they received after hospitalization, their length of hospital stay, and whether a patient survived and was discharged or died in the hospital. Since patient information was used in this study, patient confidentiality and privacy were protected by strict adherence to Health Insurance Portability and Accountability Act (HIPAA) regulations (Rinderknecht & Klopfenstein, 2021).

The present study was a retrospective cohort investigation of patients admitted to the emergency department with laboratory-confirmed COVID-19 (Fu et al., 2021). The relevant patients received treatments, such as ventilation, during their hospital stay and were identified using electronic medical records. All treatment regimens were carried out according to the guidelines of the central Queens hospital (Fu et al., 2021). I examined the factors associated with each patient's treatment modality to help medical staff better care for patients with COVID-19. The discharge data contained information on patient age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated, as well as clinical records for each patient. The information about treatment modality used and the survival of the patient were in the discharge summary of the patient's medical charts along with the demographic facts about each COVID-19-positive patient. A patient's length of stay and treatments after testing positive for COVID-19 and being admitted was available to be included in the sample. Though the study was retrospective, the data were initially gathered in real time.

Methodology

Population

The present study took place at a central Queens hospital, where participants in the age range of 18 to 65 years and over were treated for COVID-19 in the emergency department, ICU, and different hospital floor levels. The bulk of the hospital's patient population comprised of 13.3% African Americans or Blacks, 34.3% Whites, 9.3% Asians, and 0.7% Native Americans or Alaskans, and 42.4% had diverse multiethnic backgrounds. The estimated size of the target population was 1,188. Compared with other hospitals, this medical facility had an ethnically diverse patient population.

Sampling and Sampling Procedures

The study participants for this study were ethnic minority patients of various ages who lived near the hospital in Forest Hills, Queens. The patients were admitted to the emergency department and transferred to the ICU and different hospital floor levels because of the severity of their clinical manifestations (Marcello et al., 2020). The study period ran from January 1, 2020 to January 1, 2021, and involved patients who were put on a ventilator or administered medications at the central Queens hospital due to a COVID-19 diagnosis (Marcello et al., 2020). The number of patients with COVID-19 admitted to the hospital's emergency department during the time frame of the study was 1,500; however, only 1,188 medical charts were reviewed, which was the sampling threshold of the study (Marcello et al., 2020). The sample size was high enough to have statistical significance, which was seen through a G*power equation using a binary logistic regression method. The participants were of a certain age, gender, and ethnicity, with comorbidities. Their length of hospital stay varied based on their treatment. The sample was drawn from patients who identified themselves as African Americans or Blacks, Latinos, Hispanics, or those of mixed ethnicity.

The covariates which acted as independent variables were age, gender, comorbidities, and hospital floor level, The primary independent variable was ethnic minority status. The predictor or explanatory independent variable was the patient's length of hospital stay, and the dependent outcome variables were treatment modalities and the survival of the patient. The power of the present study was 0.95, with a Cronbach's alpha level of 0.05 and an odds ratio of 1.3 (Kang, 2021). The high power of the study yielded statistically meaningful results if the *p* value was less than the Cronbach's alpha level, indicating that the treatments were effective to patients with COVID-19.

Sample Size Calculation and Determination

The sample size was determined using a calculation of power analysis to estimate the correct sample size needed to reject the null hypothesis at a set significance level if the alternative hypothesis turned out to be true. Alpha, power, and effect size were adopted to approximate the sample size for the study. A G*Power sample size was used to calculate the logistic regression, with an alpha level of 0.05, a 95% power, and an effect size of 0.2, where the probability of $Y = 1$ and $X = 1$ required the sample size to be 1,188. An alpha level of 0.05 was adopted to reject the null hypothesis that a statistically significant difference occurred between the independent variables or covariates and the dependent outcome variable in the research questions.

The sample size calculation was essential when collecting and analyzing the data for the cross-sectional study (Suresh & Chandrashekara, 2012). In this study, the power of the study increased with sample size. The acceptable required power needed for a study was 80%. G*Power version 3.1.9.4 software was used to determine the number of COVID-19-positive patients in the study. The sample size was calculated for the *z* test using a logistic regression method, where the variances were known, and the sample size was large based on the parameters as seen in Table 1 and Figure 2.

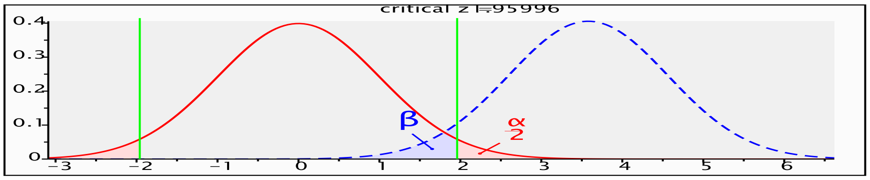
Table 1

*G*Power Parameters*

z tests—Logistic regression		
Options: Large sample z-Test, Demidenko (2007) with var corr		
Analysis: A priori: Compute required sample size		
Input	Tail(s)	Two
	Odds ratio	1.3
	Pr(Y=1|X=1) H0	0.2
	α err prob	0.05
	Power (1-β err prob)	0.095
	R^2 other X	0
	X distribution	Normal
	X parm μ	0
	X parm σ	1
Output	Critical z	1.9599640
	Total sample size	1,188
	Actual power	0.9501294

Figure 2

*Output from G*Power*



Inclusion and Exclusion Criteria

The study included in the sample 1,188 at-risk hospitalized patients with COVID-19 between January 1, 2020 and January 1, 2021; they had all been patients in the medical facility’s emergency department, ICU, and different hospital floor levels at the central Queens medical facility (Witham et al., 2020). The initial inclusion criteria were admission to the hospital in question and a positive COVID-19 test (Marcello et al., 2020). Recruiting people for the study was challenging because not all spoke English. Furthermore, including underserved groups at high risk of COVID-19 infection had obstacles, especially individuals with comorbid medical problems, ethnic minorities, pregnant and lactating women, and children younger than 18 years old (Witham et al., 2020). Patients with high-risk clinical conditions were also difficult to recruit for the study because they likely had severe adverse side effects to medications, which made them difficult to treat (Chokkara et al., 2021).

Most older people greater than 65 years old in the present study with underlying health conditions who were overweight or obese were included in the study. Young adults aged 18 years to 65 years were also included in the study. The reason why older adults were of a primary concern was because of a high rate of hospitalizations and deaths related to COVID-19. Including older patients in a COVID-19 study generated clinically relevant evidence because these people were in urgent need of care. The inclusion of younger patients with COVID-19 made the results of the study non-generalizable for an emerging disease because older adults had the greatest number of deaths. The individuals included in the study consisted of people from African American or Black, Asian, and other ethnic minority groups (Witham et al., 2020). A few people that were overweight or obese and came from low-income families were included in the study. Furthermore, the patients involved in this study were generally underrepresented in the overall population (Witham et al., 2020).

Patients who were outside of the age parameters of 18 years to 65 years and older were excluded from the study (Witham et al., 2020). Moreover, patients who were not diagnosed with COVID-19 with a legitimate test for COVID-19 were not included in the study. Patients who came in the hospital and presumed to have COVID-19 were excluded. Therefore, looking at patient charts was important because people admitted for COVID-19 diagnosis who did not actually have a COVID-19 test were not qualified to participate in the study (Witham et al., 2020).

In brief, the study's inclusion and exclusion criteria made it difficult to generalize the research findings because of recruiting ethnic minorities (Chokkara et al., 2021). In addition, the effectiveness of treatments was difficult to determine due to the time-sensitive nature of COVID-19 as an illness (Chokkara et al., 2021). Further, though individuals whose records were included in the study lived near the hospital, some had barriers to participate in the study.

Procedures for Recruitment, Participation, and Data Collection

The retrospective data for this study were collected from January 1, 2020 to January 1, 2021, and contained information on patient age, gender, ethnicity, comorbidities, length of hospital stay, hospital floor level where COVID-19-positive patient was treated, patient survival, and treatment(s) received. The criterion for being hospitalized was the presence of symptoms of coronavirus infection. Furthermore, many patients who tested positive for the virus at the medical facility had SARS; most of them were put on a ventilator (de Souza et al., 2021). The dataset primarily contained patients admitted to the emergency department and transferred to the ICU and different hospital floor levels. The study data included 1,188 patients in a single cohort; each patient was either treated for the disease until discharged from the hospital or died from the disease. The dataset had complete information on the risk factors for each patient that had the virus, and one goal of the study was to analyze the risk factors for mortality (de Souza et al., 2021). Comorbidities included in the dataset were heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma. The data had each patient's vaccine status and when a patient was admitted and discharged from or died in the hospital (de Souza et al., 2021).

The data for this cross-sectional study was obtained from the patient's medical charts during a specific period (Nguyen et al., 2021). Approval for use of the data was via an IRB from the university and the medical facility where the study was being conducted (approval no. 0672506). The patient data were de-identified, and the discharge records of adults 18 years to 65 years and older diagnosed with COVID-19 were admitted to the central Queens hospital between January 1, 2020 and January 1, 2021 (Nguyen et al., 2021). I evaluated the association between the treatment modality used and ethnic minority status, which influenced the level of care that the patient with COVID-19 received based on patient characteristics. The primary outcome of the study was the mortality of the patient, and this time was from patient admission to the hospital to their discharge period, and it was analyzed based on the age of the patient (Nguyen et al., 2021). Length of hospital stay was a predictor or explanatory independent variable, which was the time of death of COVID-19-positive patients at the central Queens hospital (de Souza et al., 2021). The variables in the dataset were analyzed with binary logistic regression model for each subgroup of patients treated for coronavirus.

I examined the association between the treatment received and predictors of mortality for ethnic minority patients at a hospital that was part of a health care system for the overall population of patients with COVID-19 stratified by emergency department admissions (Coppock et al., 2021). Multiple data sources were used to try to answer the research questions regarding the best treatment for COVID-19-positive patients and to determine the mortality of patients admitted to a central Queens hospital. Pharmacological interventions lessened the severity of the signs and symptoms of the disease and improved the therapeutic optimization of patients with COVID-19. Furthermore, gaps in COVID-19 datasets were filled as risk factors and ethnic disparities (Dolgin, 2020). High-quality data were used to gather evidence and establish guidelines during future disease crises (Dolgin, 2020).

Real-world data sources in the present study were used to show that a treatment worked; however, the results of the studies had to be interpreted with caution because many findings could not be generalized to the overall population. Actual data ensured that the products on the market were safe to use for patient care (Dolgin, 2020). An example of when real-world data posed a problem involved the antimalarial drug hydroxychloroquine, which had minimal to no benefit to patients with coronavirus infection; it did not mitigate the need for ventilation or reduce the risk of death (Dolgin, 2020). With hydroxychloroquine already approved for malaria, some health care providers rapidly administered it for emergency use in COVID-19 but then stopped prescribing the medication because of questions regarding its effectiveness (Dolgin, 2020). Data sources also revealed a debate surrounding the use of blood plasma to ward off death. The effectiveness of plasma therapy for patients with COVID-19 was uncertain, and whether convalescent plasma treatment could be a lifesaving modality for patients with COVID-19 remained doubtful (Dolgin, 2020).

Instrumentation

The tool used in the present study to measure the variables of interest in the data-collection process was an Abbott instrument. The analyzer was a frequently used COVID-19 diagnostic test, which worked rapidly and detected viral nucleic acids from nasopharyngeal swabs (Basu et al., 2020). The test was automated and used amplification technology. The assay enlarged a distinct area of the genome and gave positive or negative results within 5 min to 10 min (Basu et al., 2020). Another molecular method was the Cepheid SARS COVID-2 test, a real-time PCR assay that used a nasopharyngeal swab and nasal aspirate. The test amplified nucleic acid targets specific to the disease (Basu et al., 2020). The samples were loaded onto the instrument, and the test gave results within a valid range determined by the manufacturer. The analyzer interpreted the results automatically and provided a measurement of the viral load. The FDA approved both assays for emergency use in laboratory settings (Basu et al., 2020).

The two platforms for the present study used approximately 1,188 samples from patients in the emergency department, ICU, and hospital floor aged 18 years to 65 years and older suspected with COVID-19, with tests administered shortly after the onset of symptoms (Basu et al., 2020). A total of five patients were excluded from testing because they had recently undergone a surgical procedure. According to the established protocol, the samples were tested using a viral transport medium (Basu et al., 2020).

The currently available FDA-approved test for this study was a reverse transcriptase-PCR (RT-PCR) method (Bastola et al., 2020). The test was approved for research surveillance purposes and indicated whether a patient was positive or negative for coronavirus (Bastola et al., 2020). The test provided data on sensitivity and specificity; however, false positive results sometimes occurred. The most commonly used samples for the test were nasopharyngeal swabs (Bastola et al., 2020). The samples were tested for patients in the study from the onset of the pandemic and whenever people were susceptible to the disease (Bastola et al., 2020).

The RT-PCR was a molecular-based test approved for use at the central Queens hospital laboratory (Bastola et al., 2020). The PCR assay used viral nucleic acids for detection and yielded 69% and 63% sensitivity. The test accurately identified 69% who tested positive and 63% of patients had the disease (Bastola et al., 2020). The collection, transport, and processing of samples could sometimes compromise test results (Bastola et al., 2020). Some crucial aspects of the test were that older age was associated with a high viral load, and a large number of positive COVID-19 tests arose from individuals presenting with symptoms. The primary clinical manifestation was fever. If patients were infectious, they were likely to test positive for the disease. A few studies in the literature recommended nasopharyngeal samples for testing; however, these studies are based on limited data. Although RT-PCR was a high-performance molecular test, caution should be exercised when reporting its results (Bastola et al., 2020).

Operationalization of Constructs

The variable names and descriptions for the present study came from a large hospital healthcare system data dictionary for age, gender, ethnicity, comorbidities, length of hospital stay, hospital floor level where COVID-19-positive patients were treated, medication use, ventilator use, and treatments received by patients with COVID-19 (Coppock et al., 2021). The data was collected from patients' medical charts by accessing their electronic medical records. The variables were age, gender, ethnicity, comorbid medical conditions, length of hospital stay, hospital floor level where COVID-19-positive patients were treated, medication use, ventilator use, and treatment modalities. For the age variable, which was a demographic factor and ordinal and categorical variable, participants were asked to state their age in years. Age cohorts were then created, one of 18 years to 64 years and the other 65 years and above (Arasteh, 2021). The gender variable was either male or female, and it was a nominal and categorical variable. The variable was coded as “0” for male and “1” for female (Arasteh, 2021). The ethnicity variable, a nominal and categorical variable, identified a patient as White, African American or Black, Asian, Hispanic or Latino, another ethnicity, or with diverse multiethnic backgrounds (Arasteh, 2021). The variable comorbidities was a categorical variable, which was applied to young and older people with medical conditions, such as heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma, with an increased risk of death when infected with COVID-19 (Arasteh, 2021). The length of hospital stay was measured from patient admission to the medical facility to patient discharge or death in the hospital. The hospital floor where the COVID-19-positive patients were treated were the emergency department, ICU, and the fourth, fifth, and sixth floors of the medical facility. The variables medication use and ventilator use were categorical, and they indicated whether a person is or was not on a medication or placed on a ventilator. The variables were coded in the dataset as “0” for no medication use and no ventilator use and as “1” for being on a medication and being placed on a ventilator. The treatment modality variable was nominal and categorical; treatments received by patients included being placed on a ventilator and receiving medications (Coppock et al., 2021). If the COVID-19-positive patient was on medication, the dataset named the medication that the patient was on to treat their COVID-19 symptoms. The names of the medications could be chloroquine and/or hydroxychloroquine, ivermectin, remdesivir, dexamethasone, monoclonal antibodies (babtelovimab), immunomodulators (tocilizumab), and oral antivirals, such as paxlovid and molnupiravir.

Data Analysis Plan

A logical progression from the research problem to the purpose of the present study was established. The research problem was that the treatment modalities that impacted patient outcomes were unknown for patients with coronavirus infection of specific ages, gender, and ethnicities with underlying medical conditions. The purpose of the study was to investigate the association between different treatment approaches, which included the administration of medications or mechanical ventilation and ethnic minority status and other factors, such as the patient's age, gender, comorbidities, length of hospital stay, and hospital floor level for COVID-19-positive patients at a central Queens hospital. The theoretical framework HBM examined the care that patients with COVID-19 received in the hospital's emergency department, ICU, and different hospital floor levels and grounded the investigation in the study problem. The study's problem, purpose, and framework aligned with the research questions that asked about the association between the various treatment approaches used and the mortality of the COVID-19-positive patient. The research looked at whether a patient's age, gender, ethnicity, and comorbidities were associated with the treatment approach used to improve outcomes in patients with coronavirus infection at a hospital located in Forest Hills, Queens. Another goal of the study was to determine the association between mortality of COVID-19-positive patients and ethnic minority status and other risk factors, such as the patient's age, gender, and comorbidities. The research questions addressed the problem and aligned with the purpose of the study. The variables used for the research questions were age, gender, ethnicity, comorbidities, the length of hospital stay, and hospital floor level where COVID-19-positive patients were treated, each of which helped address the research questions. The binary logistic regression method examined the association between the different treatment approaches and looked at mortality regarding the ethnic minority status of the COVID-19-positive patients for those patients admitted with a diagnosis of COVID-19 to the hospital, and this method was used to help answer all three research questions. The treatment approach used had an impact on the length of stay, which was the number of days spent in the hospital for admitted patients with COVID-19. The dataset consisted of secondary data from a hospital laboratory for COVID-19-positive patients. The laboratory director provided a list of all COVID-19-positive patients admitted to the emergency department of the central Queens hospital.

Research Questions and Hypotheses

The following were the primary research questions and hypotheses for this study:

RQ1: Is there an association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

Ho1: There is no association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a1: There is an association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

RQ2: Is there an association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

H_02: There is no association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a2: There is an association between ethnic minority status and ventilator use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

RQ3: Is there an association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19?

H_03: There is no association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

H_a3: There is an association between ethnic minority status and mortality when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19.

Statistical Procedures

The present study used a binary logistic regression to determine the association of various treatment approaches, which included the administration of medications or placing the patient on a ventilator and the mortality of the patient and ethnic minority status where multiple covariates, such as age, gender, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated were examined in terms of a binary outcome variable (Rai et al., 2021). The dependent outcome variable was whether a COVID-19-positive patient died or survived, and this depended on the treatment that they received, which impacted their length of stay in the hospital. The binary logistic regression method was used in this study to analyze the risk factors related to a COVID-19-positive patient's length of hospital stay. Consequently, the categorical variables were covariates and acted as independent variables in the study (Rai et al., 2021). The study's statistical procedure examined factors, such as patient age, gender, COVID-19 signs and symptoms, the severity of the disease, and comorbidities, to help predict whether a COVID-19-positive patient would survive (Rai et al., 2021). The Hosmer Lemeshow test statistic was used to test for goodness of fit for the model, and the logistic regression model was used to aid in predicting the patient's mortality. The adjusted odds ratios were used to examine the effects of the independent variables, which were the covariates on the outcome variable of the research (Rai et al., 2021). A *p*-value of 0.05 indicated that the independent predictor variables were significantly associated with a high risk for mortality after controlling for confounders (Rai et al., 2021). For this cross-sectional study, the clinical factors related to mortality were the length of hospital stay and the treatment received (Rai et al., 2021).

The outcomes associated with seeking treatment for clinical manifestations of COVID-19 depended on risk factors, such as age, gender, ethnicity, and any underlying health problems (Huang et al., 2021). The results of a binary logistic regression revealed to the researcher what it meant when a COVID-19-positive patient was treated for the disease based on various treatment modalities when controlling for other risk factors, such as the patients' age, gender, ethnicity, and comorbidities (Huang et al., 2021). Odds ratios were estimated using logistic regression. The selected variables predicted the likelihood that a patient with COVID-19 would survive or die and thus, lend robustness to the study's findings (Huang et al., 2021). All analyses were done with SPSS. The binary logistic regression model was used to assess the association between the demographic variables and the hospital's patient treatments (Bates et al., 2021). Odds ratios and 95% confidence intervals were used to evaluate the associations between age, gender, ethnicity, and comorbidities with the treatment received by patients with COVID-19. The performed statistical significance level of the study was 0.05. The binary logistic regression model was used to predict the adoption of different treatment approaches for COVID-19-positive patients.

The length of hospital stay was a predictor or explanatory independent variable in the study that determined whether a patient would survive or die in the hospital, and this interfered with the plan of the study with a valuable conclusion. The variable length of stay could be confounded by factors that included the patient's age, gender, ethnicity, comorbidities, and treatment received in the hospital. The length of stay was controlled by the healthcare provider who treated a COVID-19-positive patient. If a treatment modality was helping people live, this would indicate some good direction and prolong the survival of the patient. The length of hospital stay was also considered if the study looked at mortality. The admission of the patient with COVID-19 to the emergency department or ICU of the hospital regardless of whether the person would live or die given a treatment modality, the reasons for the patient's length of stay in the medical facility could be a predictor or explanatory independent variable that the researcher considered to be important; however, this factor could be confounded by covariates, such as patients' age, gender, ethnicity, comorbidities, and hospital floor level where the COVID-19-positive patient was treated, which could mislead the study results. Undeniably, having not only an outcome of life or death when investigating the mortality rates for patients or the treatment modality received while hospitalized was crucial.

The inferential statistical analysis to test each hypothesis was a binary logistic regression method. The binary logistic regression method analyzed two or more independent variables on a single outcome factor. For the first research question, the statistical test looked at the medications that a patient received and their ethnic minority status on a single dependent outcome variable. The hypotheses tested whether an association between medication use, and length of hospital stay could be observed when controlling for covariates, such as the patient's age, gender, comorbidities, and hospital floor level where COVID-19-positive patient was treated. The second research question used the binary logistic regression method to determine whether a relationship between mechanical ventilation use and ethnic minority status could be found for patients with COVID-19 admitted to the hospital. The hypotheses determined whether an association between ventilator use, and length of hospital stay could be observed when controlling for covariates that included the patient's age, gender, comorbidities, and hospital floor level where the COVID-19-positive patient was treated. The third research question tested the hypotheses with the same binary logistic regression method. Still, this time, the mortality and ethnic minority status of the patient were evaluated, which were the independent factors among patients admitted to a central Queens hospital. The odds of the patient dying in the hospital were dependent on their ethnicity when controlling for variables, such as the patient's age, gender, comorbidities, and the hospital floor level where COVID-19-positive patients were treated. The probability of death for Caucasian and non-Caucasian patients with COVID-19 admitted to the central Queens hospital was examined. For all three research questions, including the hypotheses, the likelihood of the patient of a specific ethnicity surviving the treatment or dying in the hospital would be interpreted using odds ratios with 95% confidence intervals.

Threats to Validity

The present study had no impact on whether the results of the research were trustworthy and meaningful because sometimes, the treatment given to the patient was modified, and the research had to change how patients responded to treatments (Mara & Peugh, 2020). A study of this nature had a specific timeframe to provide useful results. Since the study involved a vulnerable group of patients with COVID-19, selection bias was found, and some people might have dropped out of the study because of the effects of the disease or for other reasons. The study dealt with a vulnerable population, which threatened its internal validity (Mara & Peugh, 2020).

Furthermore, patients were treated by healthcare providers, which was a face-to-face intervention that was an effective way to have patients adhere to their treatment regimen (Mara & Peugh, 2020). The people on the ventilators had little choice other than death but to remain on the ventilator. When doctors and nurses provided care to the patients, they interacted with them, which led to stressful situations. Treatment interventions improved patient outcomes because in a hospital setting, medical staff observed patients receiving a particular treatment (Mara & Peugh, 2020). The overall validity of this study was preserved when a treatment was administered safely.

The data collected from the studied hospital in central Queens was not compared to the information obtained from other hospitals. This limitation impaired a healthcare provider's ability to use the study's results to help make informed decisions when treating critically ill patients with COVID-19 (Gupta et al., 2020). By not looking at inter-hospital variations in the treatments, the results of a study could be interpreted in a misleading manner. In brief, threats to the study's validity had to be re-examined when considering the impact of the pandemic on the study population and when the efficacy of different treatment modalities to see if certain treatments were more advantageous to the patients.

Ethical Procedures

The data for the present study was obtained from chart reviews of patients with COVID-19. When looking at the information in a patient's medical record, protecting confidentiality was essential (Breault, 2013). HIPAA ensured that patient data remained confidential and private (Sarkar & Seshadri, 2014). The patient gave the researcher consent to use their medical records for research purposes; otherwise, the patient–physician relationship could be compromised, and the patient could experience emotional pain (Sarkar & Seshadri, 2014). Healthcare providers used charts to ensure continuity of care when treating patients, and medical records for research could be of enormous importance to clinicians in determining which treatment modalities were most suitable.

Furthermore, for a researcher to access patient electronic health records, IRB approval and a user and confidentiality agreement were required (Breault, 2013). Since the research involved hospital records but was conducted through an academic institution, the researcher applied for an external IRB. The school's IRB consisted of many documents that had to be approved by both the university and the medical facility (Breault, 2013). If information extracted from patients' medical records had no patient names, a study was considered exempt. However, to ensure that the study results were valid, the investigator looked at several medical charts, which required informed consent (Breault, 2013). The data in the chart review had all the patients' protected health information; however, when the data was pulled out of individual records, they were anonymized according to HIPAA standards (Breault, 2013). The types of medical records reviewed were discussed between the researcher and health information management specialists to finalize the parameters of the dataset needed for a particular study (Breault, 2013). The ethical aspects of this study surrounded the use of patient charts regarding informed consent and confidentiality.

Clinical record research was used to answer questions about the treatment of specific types of patients, including those with COVID-19 (Sarkar & Seshadri, 2014). After the data in the charts for each COVID-19-positive patient was analyzed, the findings of the dissertation were disseminated. Using medical charts involved looking at retrospective data to answer the research questions, and it generally required appropriate statistical analysis to draw suitable inferences from the data (Sarkar & Seshadri, 2014).

Using data obtained from patient medical records had advantages and disadvantages (Sarkar & Seshadri, 2014). Since the charts already existed, this approach was less resource intensive. The information was easy to collect because it was routinely recorded by medical providers (Sarkar & Seshadri, 2014). The main disadvantage was that patients' medical records might be easy to retrieve, and some data might contain incomplete information (Sarkar & Seshadri, 2014). If enough data were not consistently recorded in patient charts, this might affect the extraction and interpretation of the variables in a study (Sarkar & Seshadri, 2014).

Finally, before a researcher collected data for this study, the approach must be approved by the IRB of both the university and the hospital because the data contained extremely sensitive personal information that should be protected against unauthorized access (Sarkar & Seshadri, 2014). Even when all ethical procedures were carefully followed, sharing the results at the end of the study posed an ethical dilemma. The researcher should weigh the benefits and risks of communicating the clinical findings of the research (Sarkar & Seshadri, 2014).

Summary

The present study needed a robust research design to help answer the research questions and test the hypotheses (Stallard et al., 2020). A sufficient number of patients with COVID-19 had to be admitted to the hospital to provide enough evidence without compromising the validity or integrity of the study. Furthermore, the research design sometimes encountered challenges related to finding the best treatment for a patient with COVID-19 during a crisis. Given that this study's design was cross-sectional, it evaluated patients from January 1, 2020 to January 1, 2021. The study focused on certain risk factors among a discrete cohort of COVID-19-positive individuals who either recovered or died. The study results might help improve outcomes and decrease transmission; however, the study design did not play that role (Stallard et al., 2020).

The study provided definitive information about treatment interventions because a specific therapy to prevent infection and end the COVID-19 outbreak might eventually be established. However, some healthcare providers had limited experience in treating patients with COVID-19, even after the pandemic had become part of daily life (Stallard et al., 2020). The study was not completely randomized because the population of interest for the research had to be ethnic minority patients, and the study involved a single hospital.

Furthermore, concerning the research method, the present study suffered from methodological issues associated with the prediction of a patient's diagnosis and prognosis regarding the risk of future health outcomes in individuals with COVID-19 (Molenberghs et al., 2020). When the study tried to predict a patient's survival, the research looked at other patients discharged from the hospital because they had recovered. The scenario at a central Queens hospital where patients were treated for coronavirus infection had to consider the effects of treatments on patient mortality rates (Molenberghs et al., 2020). Chapter 4 contained a presentation of the results and a discussion of the study findings.

Chapter 4: Results

The purpose of the research study was to explain why ethnic minorities had the worst health outcomes with COVID-19 (Ali Shah et al., 2021). I investigated whether patients of a specific age, gender, or ethnicity with underlying medical conditions received different treatment modalities at the central Queens hospital. The aim was to determine if non-Caucasians received different treatment regimens compared with Caucasians and if they did respond to various treatments and whether this was based on their age, gender, ethnicity, comorbidities, and the length of stay in the hospital located in Forest Hills, Queens. According to New York City's public hospital system guidelines, it looked like preferential treatment was given to patients with COVID-19 with comorbid medical conditions or risk factors that placed them at high risk for having the disease (Marcello et al., 2020). The patient population consisted of patients identifying themselves as African Americans or Blacks, Asians, Hispanics, Latinos, Whites, and individuals with multiethnic backgrounds. The risk factors included age, comorbidities, and the patient's ethnicity, such as being non-white, Hispanic, or Latino, which could increase illness severity and even cause death (Marcello et al., 2020).

The questions answered in the study related to whether there was an association between ethnic minority status and medication use when controlling for age, gender, comorbidities, length of hospital stay, and hospital floor level among patients admitted to a central Queens hospital for COVID-19 as well as whether there was an association with these variables and ventilator use and mortality. The study used a binary logistic regression method because all the dependent variables were dichotomous. This statistical test was the best fit model for the research. In addition, the study had no missing variables; however, the power analysis stated that a sample size of 1,188 COVID-19-positive cases was sufficient for this study.

Chapter 4 reports the study results for a specific timeframe of the COVID-19 crisis and indicated how the data were collected. In addition, tables and figures are included for each statistical result in the study. The chapter also provides the descriptive and inferential statistics used to answer each research questions and hypotheses.

Data Collection

The data were collected for the study for patients admitted to the central Queens hospital from January 1, 2020 to January 1, 2021. The period in which the data were collected for the study changed based on my ability to access the patient's electronic medical records (Rinderknecht & Klopfenstein, 2021). The study needed the data collected from the specified timeframe of the COVID-19 crisis for the number of patients with COVID-19 who had been administered medications or placed on ventilators at the hospital (Marcello et al., 2020). The patients counted in the study had to be admitted to the hospital and had the disease confirmed by a COVID-19 test (Marcello et al., 2020).

The data were collected using a chart review, and I had access to the electronic medical records of 1,188 COVID-19-positive patients. The variables included in the dataset were age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated. Other variables were ventilator use, medication use, and medications received. The patients' ages ranged from 18 years to 65 years and over. The patient's age varied depending on whether the patient was a child or adolescent. The age of the COVID-19-positive patient was determined by looking at their date of birth in the medical records; however, the dataset had the patient's exact age. The gender of the patient was male or female, and their ethnicity was either African American or Black, Asian, Hispanic, Latino, White, or multiethnic. Comorbidities were the patient's medical conditions, including heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma and a positive COVID-19 diagnosis. The length of hospital stay was measured from the time of patient admission to the medical facility until the patient was discharged. The COVID-19-positive patient's length of stay was determined by their admission and discharge dates from the medical facility. The length of hospital stay was denoted as a time period in the dataset.

The dataset indicated whether each COVID-19-positive patient was given medication to treat their COVID-19 symptoms or was placed on a ventilator. Medication use and ventilator use were answered using the designation of "yes" or "no." The dataset named the medication that the COVID-19-positive patient received to treat their disease signs and symptoms. The dataset had the mortality of the COVID-19-positive patient. The mortality of the COVID-19-positive patient was whether the patient was discharged alive or dead in the central Queens hospital.

The dataset was created using an Excel spreadsheet and SPSS application and analyzed using a binary logistic regression method. The dataset had no personal identifiers that could be used to reidentify the COVID-19-positive patients. The information extracted from each COVID-19-positive patient's electronic medical record were the variables needed to answer the research questions. The identifying information from the patient's medical records used for the analysis was the patient's sex or gender (male or female), age at the time of admission, ethnic background, comorbidities, length of hospital stay, and treatment received. Information, such as the patient's name, social security number, and date of birth, were not included in the dataset because this data could be used to trace the patient, which was a HIPAA violation.

A binary logistic regression method was used to answer the research questions. The data was manipulated and evaluated appropriately for final analysis to show an association between the difference in treatment modalities and an increase in mortality for different ethnic populations in central Queens hospital (Rai et al., 2021). The method involved looking at two or more independent variables known as covariates, such as age, gender, and comorbidities, on a single dependent outcome variable: the survival of COVID-19-positive patient (Rai et al., 2021).

The study results had potential sources of bias that were introduced into the study during the data collection (Simundic, 2013). The study results were skewed or distorted because of a convenient and non-representative sample (Simundic, 2013). The study was biased because the sample was convenient and non-representative of the patient population (Diaz-Pachon & Rao, 2021). The data gathered did not represent the actual population of patients with COVID-19 at the central Queens hospital since most patients besides Caucasians were ethnic minorities; therefore, the sample was non-randomized from a pre-defined group of patients with COVID-19 (Diaz-Pachon & Rao, 2021). The patients for the study were primarily ethnic minorities and were treated at a central Queens hospital representing only a cross-section of the United States.

Furthermore, errors in data collection make the study hard to replicate. The study distorted the association between ethnic minority status and medication use, ventilator use, and mortality because of the covariates. This was the reason why an ethnic bias occurred in the background of the health care providers who made the decisions in the hospital for patients with COVID-19 (Raharja et al., 2021). Inaccurate data for the study indicated that a specific ethnicity, such as African Americans or Blacks, at the central Queens hospital were not receiving updated treatments based on their ethnic background (Sze et al., 2020).

Treatment and/or Intervention Fidelity

The group of patients at the hospital were all diagnosed with COVID-19 using a COVID-19 test and were admitted to central Queens hospital between January 1, 2020 to January 1, 2021 with different ethnicities (Dinesh et al., 2021). Once all ethnicities and percentages were obtained from the medical facility, I had to determine what procedures or treatments each group received from the hospital. I evaluated if one group received more modalities than the other group (Dinesh et al., 2021). In addition, I looked at patient charts for their outcomes to determine whether the treatment given to the COVID-19-positive patient mattered (Sze et al., 2020). From reviewing the data, no ethnic differences might be observed in the treatment modalities used to treat the COVID-19-positive patients at the hospital (Sze et al., 2020).

The study had patients who experienced adverse reactions to medications administered to treat the disease or adverse events to the use of ventilation to support a person's breathing (Perez et al., 2021). Taking hydroxychloroquine or chloroquine during the early stages of the COVID-19 pandemic had negative side effects including headaches, dizziness, loss of appetite, nausea, diarrhea, stomach pain, vomiting, and rashes. The intervention's severe adverse drug reactions were fatal and life-threatening and required hospitalizations (Perez et al., 2021). The distribution of the adverse drug reactions was similar for all patients in the central Queens hospital. However, a few patients with comorbidities, such as heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma had more significant reported side effects (Perez et al., 2021). Using hydroxychloroquine and chloroquine in treating COVID-19-positive patients based on ethnicity increased reported adverse drug reactions (Perez et al., 2021). The high number of reported adverse drug reactions was due to the interactions between the medications administered, changes in patient characteristics, underlying health conditions, increased doses, and pharmacokinetics in patients with COVID-19 (Perez et al., 2021).

Results

In this study, the variables analyzed descriptively were age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated. The dependent variable for RQ1 was medication use, and the dependent variable for RQ2 was ventilator support. The dependent outcome variable for

RQ3 was the mortality of the COVID-19-positive patient. The independent variables that act as covariates for RQ1, RQ2, and RQ3 were age, gender, comorbidities, length of hospital stay, and hospital floor level. The primary independent variable for RQ1, RQ2, and RQ3 was ethnic minority status. The following section shows the descriptive statistics for the study and the results of the binary logistic regression analyses.

Descriptive Statistics

The COVID-19-positive patients in the study were 18 years to 65 years and older, and the sample size was n = 1,188. The patients at the central Queens hospital were primarily ethnic minorities. African American or Black patients accounted for 158 (13.3%), Asian patients accounted for 110 (9.3%), multiethnic patients accounted for 504 (42.45%), Native American or Alaskan patients accounted for 8 (0.7%), and White patients accounted for 408 (34.3%) of the study population at the hospital located in Forest Hills, Queens.

Descriptive statistics were also used to describe each ethnic group of patients whether they were on a medication to treat their COVID-19 symptoms. Other factors included if they had one or more comorbidities, were on mechanical ventilation, their length of hospital stay, and whether they were discharged alive or died in the hospital. In addition, descriptive statistics were used to identify the group of COVID-19-positive patients in the study, and percentages were used for the categorical variables.

Logistic regression models looked at the dependent outcome variables, medication use, ventilator support use, and mortality outcome, and pre-specified variables, including age, gender, ethnicity, comorbidities, length of hospital stay, and the hospital floor level where the COVID-19-positive patient was treated. The variable comorbidities affected the severity of the disease and factors essential to a patient's care while in the emergency department, ICU, and the different hospital floor levels. The logistic regression method involved a two-tailed analysis and a significance level of 0.05. A summary of the descriptive statistics is presented in Tables 2 and 3.

Table 2

Descriptive Statistics

		Frequency	Percent	Cumulative Percent
Hospital floors				
Valid	LFH 4North	337	28.4	28.4
	LFH 4South	203	17.1	45.5
	LFH 5North	122	10.3	55.7
	LFH 5South	203	17.1	72.8
	LFH ED and ICU	114	9.6	82.4
	LFH 6North	102	8.6	91.0
	LFH 6South and 6 East	107	9.0	100.0
	Total	1,188	100.0	
Age groups				
Valid	18 years to 65 years	509	42.8	42.8
	65 years and older	679	57.2	100.0
	Total	1,188	100.0	
Sex				
Valid	Female	518	43.6	43.6
	Male	670	56.4	100.0
	Total	1,188	100.0	
Ethnicity				
Valid	African American/Black	158	13.3	13.3
	White	408	34.3	47.6
	Multiethnic	504	42.4	90.1
	Asian	110	9.3	99.3
	Native American/Alaskan	8	.7	100.0
	Total	1,188	100.0	
Caucasian or non-Caucasian				
Valid	Caucasian	408	34.3	
	non-Caucasian	780	65.7	
	Total	1188	100.0	
Comorbidity				
Valid	No	88	7.4	7.4
	Yes	1100	92.6	100.0
	Total	1,188	100.0	
Diabetes				
Valid	No	785	66.1	66.1
	Yes	403	33.9	100.0
	Total	1,188	100.0	
Hypertension				
Valid	No	571	48.1	48.1
	Yes	617	51.9	100.0
	Total	1,188	100.0	
Obesity				
Valid	No	1,174	98.8	98.8
	Yes	14	1.2	100.0
	Total	1,188	100.0	

(table continues)

		Frequency	Percent	Cumulative Percent
Heart disease				
	No	1,187	99.9	99.9
	Yes	1	.1	100.0
	Total	1,188	100.0	
Hyperlipidemia				
Valid	No	1,030	86.7	86.7
	Yes	158	13.3	100.0
	Total	1,188	100.0	
Pulmonary embolism				
Valid	No	1,142	96.1	96.1
	Yes	46	3.9	100.0
	Total	1,188	100.0	
DVT				
Valid	No	1,161	97.7	97.7
	Yes	27	2.3	100.0
	Total	1,188	100.0	
Atrial fibrillation				
Valid	No	1,052	88.6	88.6
	Yes	136	11.4	100.0
	Total	1,188	100.0	
Pneumonia				
Valid	No	643	54.1	54.1
	Yes	545	45.9	100.0
	Total	1,188	100.0	
Dyspnea				
Valid	No	1,169	98.4	98.4
	Yes	19	1.6	100.0
	Total	1,188	100.0	
Kidney disease				
Valid	No	1,096	92.3	92.3
	Yes	92	7.7	100.0
	Total	1,188	100.0	
CAD				
Valid	No	1,096	92.3	92.3
	Yes	92	7.7	100.0
	Total	1,188	100.0	
Anemia				
Valid	No	1,000	84.2	84.2
	Yes	188	15.8	100.0
	Total	1,188	100.0	
Asthma				
Valid	No	1,115	93.9	93.9
	Yes	73	6.1	100.0
	Total	1,188	100.0	
COPD				
Valid	No	1,131	95.2	95.2
	Yes	57	4.8	100.0
	Total	1,188	100.0	

(table continues)

		Frequency	Percent	Cumulative Percent
Respiratory failure				
Valid	No	650	54.7	54.7
	Yes	538	45.3	100.0
	Total	1,188	100.0	
Medication use				
Valid	No	535	45.0	45.0
	Yes	653	55.0	100.0
	Total	1,188	100.0	
Dexamethasone				
Valid	No	1,070	90.1	90.1
	Yes	118	9.9	100.0
	Total	1,188	100.0	
Hydroxychloroquine				
Valid	No	672	56.6	56.6
	Yes	516	43.4	100.0
	Total	1,188	100.0	
Remdesivir				
Valid	No	1,115	93.9	93.9
	Yes	73	6.1	100.0
	Total	1,188	100.0	
Tocilizumab				
Valid	No	1,124	94.6	94.6
	Yes	64	5.4	100.0
	Total	1,188	100.0	
Paxlovid				
Valid	No	1,185	99.7	99.7
	Yes	3	.3	100.0
	Total	1,188	100.0	
Ventilator use				
Valid	No	991	83.4	83.4
	Yes	197	16.6	100.0
	Total	1,188	100.0	
Mortality				
Valid	Discharged Alive	928	78.1	78.1
	Died	260	21.9	100.0
	Total	1,188	100.0	

Table 3

Statistics

LOS_IN_DAYS

N	Valid	1,188
Mean		7.85
Median		5.00
Mode		2

Statistical Assumptions: Binary Logistic Regression

A binary logistic regression method was conducted by involving certain statistical assumptions. The first assumption was that the dependent variables for all three research questions had to be binary with only two categories. The dependent variables medication use and mechanical ventilation use had either yes or no choices. The dependent variable mortality had two categories, which included discharged alive or died. The second assumption was that the independent variables or covariates were either continuous or categorical. The independent variables or covariates, such as age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patients were treated were categorical (Laerd Statistics, 2018). The third assumption was that the study's observations were independent, where one observation provided no information or data about the other. The dependent variables had to be mutually exclusive and had exhaustive categories (Laerd Statistics, 2018). The fourth assumption indicated that a straight-line relationship was necessary between at least two continuous variables. This assumption did not apply to this study because all independent variables were categorical (Laerd Statistics, 2018). This study confirmed that all the basic assumptions of the binary logistic regression method had been met.

Statistical Analysis Findings

A binary logistic regression analysis was conducted to examine the association between age, gender, ethnicity, comorbidities, length of hospital stay, and hospital floor level where COVID-19-positive patient was treated. The factors looked at the analysis for medication use, ventilator use, and mortality amongst COVID-19-positive patients at a central Queens hospital. A binary logistic regression was selected for this study because it used 6 covariates, 1 primary independent variable, and 3 binary dependent variables.

The following was a case processing summary for the study. Table 4 shows the number of cases in the study, the total number of positive COVID-19 cases in the analyses, the number of excluded or missing positive COVID-19 cases, and the total positive COVID-19 cases. A total of 1,188 COVID-19-positive cases were observed; all cases were included in the analysis, and no missing cases were found.

Table 4

Case Processing Summary

Unweighted Cases[a]		*N*	Percent
Selected Cases	Included in Analysis	1,188	100.0
	Missing Cases	0	.0
	Total	1,188	100.0
Unselected Cases		0	.0
Total		1,188	100.0

a. If weight was in effect, see classification table for the total number of cases.

The results section has “variables in the equation table” which reflects representative ethnicities as a (sig.) category which represents p-values which are greater than 0.05. This clearly shows for each research question that there is no statistically significant difference between the ethnic groups i.e., Caucasians when compared with minorities for each research question. Research questions one, two, and three were taking into account age, gender, comorbidities, length of hospital stay, and the hospital floor levels.

To address RQ1, a binary logistic regression was performed to investigate the relationship between ethnic minority status and likelihood of taking a medication, such as hydroxychloroquine, remdesivir, tocilizumab, paxlovid, and dexamethasone to manage COVID-19 signs and symptoms.

In table 5 the White (Caucasian) (p value= 0.272) was used as the reference category. The other ethnic categories (1-4) which included African American or Black (0.985) (cat 1), Multiethnic (0.111) (cat 2), Asian (0.418) (cat 3) and Native American or Alaskan (0.129) (cat 4) have (sig.) p-values far greater than 0.05 which indicated that there is no statistically significant difference in medication given to all ethnicities thus the null hypothesis must be considered.

A binary logistic regression method was carried out, and the overall model with all the predictor variables was shown to be statistically significant. According to the Wald test, the variables age ($p = 0.003$), hospital floors ($p = <0.001$), length of hospital stay ($p = <0.001$), and the comorbidities pneumonia ($p = 0.001$) and respiratory failure ($p = <0.001$) added significantly to the model but gender ($p = 0.303$), and all the ethnic groups which included White ($p = 0.272$), African American or Black ($p = 0.985$), Multiethnic ($p = 0.111$), Asian ($p = 0.418$), and Native American or Alaskan ($p = 0.129$) did not add significantly to the model (see Table 5).

Table 5

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
Age Groups	−0.437	0.147	8.892	1	0.003	0.646	0.484	0.861
Sex	0.139	0.135	1.059	1	0.303	1.149	0.882	1.497
Comorbidity	0.446	0.281	2.517	1	0.113	1.562	0.900	2.711
Diabetes	0.009	0.144	0.004	1	0.951	1.009	0.761	1.338
Hypertension	0.181	0.146	1.543	1	0.214	1.199	0.900	1.597
Obesity	−0.257	0.590	0.190	1	0.663	0.773	0.243	2.457
Heart Disease	19.734	40192.969	0.000	1	1.000	371709	0.000	.
Hyperlipidemia	0.083	0.194	0.183	1	0.669	1.087	0.743	1.590
Pulmonary Embolism	−0.648	0.334	3.772	1	0.052	0.523	0.272	1.006
DVT	−0.465	0.442	1.110	1	0.292	0.628	0.264	1.492
Atrial Fibrillation	−0.332	0.211	2.480	1	0.115	0.718	0.475	1.085
Pneumonia	0.449	0.138	10.540	1	0.001	1.567	1.195	2.056
Dyspnea	−0.553	0.532	1.082	1	0.298	0.575	0.203	1.631
Kidney Disease	−0.424	0.247	2.934	1	0.087	0.655	0.403	1.063
CAD	−0.050	0.247	0.040	1	0.841	0.951	0.586	1.545
Anemia	−0.279	0.182	2.357	1	0.125	0.757	0.530	1.080
Asthma	0.209	0.279	0.563	1	0.453	1.233	0.714	2.129
COPD	0.086	0.313	0.075	1	0.784	1.090	0.590	2.013
Respiratory Failure	1.198	0.138	75.079	1	< 0.001	3.315	2.528	4.347
Hospital Floors	0.170	0.034	24.393	1	< 0.001	1.185	1.108	1.267
LOS_IN_DAYS	0.027	0.008	12.147	1	< 0.001	1.027	1.012	1.043
Ethnicity			5.148	4	0.272			
Ethnicity (1)	0.004	0.213	0.000	1	0.985	1.004	0.662	1.523
Ethnicity (2)	0.245	0.154	2.543	1	0.111	1.277	0.945	1.726
Ethnicity (3)	0.197	0.243	0.656	1	0.418	1.217	0.756	1.960
Ethnicity (4)	1.673	1.102	2.302	1	0.129	5.326	0.614	46.204
Constant	−1.592	0.302	27.779	1	< 0.001	0.204		

a. Variable(s) entered on step 1: Ethnicity.

To address RQ2, a binary logistic regression was performed to examine the relationship between ethnic minority status and the likelihood of being placed on a mechanical ventilator.

In table 6 the White (Caucasian) (p value= 0.784) was used as the reference category. The other ethnic categories (1-4) which included African American or Black (0.236) (cat 1), Multiethnic (0.836) (cat 2), Asian (0.502) (cat 3) and Native American or Alaskan (0.999) (cat 4) have (sig.) p-values far greater than 0.05 which indicated that there is no statistically significant difference in ventilator use for all ethnicities thus the null hypothesis must be considered.

A binary logistic regression method was carried out, and the overall model with all the predictor variables was shown to be statistically significant. According to the Wald test, the variables hospital floors (p = <0.001), length of hospital stay (p = <0.001), and the comorbidities hypertension (p = <0.001) and respiratory failure (p = <0.001) added significantly to the model, but age groups (p = 0.249), gender (p = 0.572), and all the ethnic groups which included White (p = 0.784), African American or Black (p = 0.236), Multiethnic (p = 0.836), Asian (p = 0.502), and Native American or Alaskan (p = 0.999), did not add significantly to the model (see Table 6).

Table 6

Variables in the Equation

							95% C.I.for EXP(B)	
	B	S.E.	Wald	Df	Sig.	Exp(B)	Lower	Upper
Age Groups	−0.224	0.194	1.332	1	0.249	0.799	0.546	1.169
Sex	0.108	0.191	0.320	1	0.572	1.114	0.766	1.621
Comorbidity	−0.544	0.382	2.027	1	0.155	0.581	0.275	1.227
Diabetes	−0.005	0.201	0.001	1	0.980	0.995	0.671	1.476
Hypertension	−0.751	0.204	13.601	1	< 0.001	0.472	0.317	0.703
Obesity	0.241	0.829	0.085	1	0.771	1.273	0.251	6.462
Heart Disease	−19.732	40192.970	0.000	1	1.000	0.000	0.000	.
Hyperlipidemia	−0.361	0.317	1.298	1	0.255	0.697	0.374	1.297
Pulmonary Embolism	−0.767	0.641	1.431	1	0.232	0.464	0.132	1.632
DVT	−0.787	0.793	0.983	1	0.321	0.455	0.096	2.156
Atrial Fibrillation	−0.197	0.334	0.349	1	0.555	0.821	0.427	1.580
Pneumonia	−0.103	0.193	0.283	1	0.595	0.903	0.618	1.317
Dyspnea	−0.598	0.846	0.501	1	0.479	0.550	0.105	2.883
Kidney Disease	0.224	0.353	0.402	1	0.526	1.250	0.626	2.496
CAD	−0.509	0.428	1.417	1	0.234	0.601	0.260	1.390
Anemia	−0.290	0.286	1.026	1	0.311	0.749	0.427	1.311
Asthma	0.190	0.380	0.250	1	0.617	1.209	0.574	2.546
COPD	−0.025	0.442	0.003	1	0.955	0.976	0.410	2.321
Respiratory Failure	1.533	0.211	52.681	1	< 0.001	4.634	3.063	7.010
Hospital Floors	0.377	0.046	65.973	1	< 0.001	1.458	1.331	1.597
LOS_IN_DAYS	0.051	0.009	33.533	1	< 0.001	1.052	1.034	1.071
Ethnicity			1.737	4	0.784			
Ethnicity (1)	0.357	0.302	1.403	1	0.236	1.430	0.791	2.583
Ethnicity (2)	0.044	0.213	0.043	1	0.836	1.045	0.689	1.586
Ethnicity (3)	0.222	0.330	0.451	1	0.502	1.248	0.653	2.385
Ethnicity (4)	−19.204	13790.922	0.000	1	0.999	0.000	0.000	.
Constant	−3.351	0.413	65.913	1	< 0.001	0.035		

Variable(s) entered on step 1: Ethnicity.

To address RQ3, a binary logistic regression was performed to explore the relationship between ethnic minority status and mortality from COVID-19.

In table 7 the White (Caucasian) (p value= 0.855) was used as the reference category. The other ethnic categories (1-4) which included African American or Black (0.512) (cat 1), Multiethnic (0.689) (cat 2), Asian (0.587) (cat 3) and Native American or Alaskan (0.603) (cat 4) have (sig.) p-values far greater than 0.05 which indicated that there is no statistically significant difference in mortality for all ethnicities thus the null hypothesis must be considered.

A binary logistic regression method was carried out, and the overall model with all the predictor variables was shown to be statistically significant. According to the Wald test, the variables age ($p = <0.001$), hospital floors ($p = <0.001$), length of hospital stay ($p = 0.008$), and the comorbidities anemia ($p = 0.004$), asthma ($p = 0.009$), and respiratory failure ($p = <0.001$) added significantly to the model, but all the ethnic groups which included White ($p = 0.855$), African American or Black ($p = 0.512$), Multiethnic ($p = 0.689$), Asian ($p = 0.587$), and Native American or Alaskan ($p = 0.603$), did not add significantly to the model (see Table 7).

Table 7

Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age Groups	0.957	0.183	27.484	1	< 0.001	2.604	1.821	3.725
Sex	−0.144	0.163	0.787	1	0.375	0.866	0.630	1.191
Comorbidity	−0.311	0.347	0.801	1	0.371	0.733	0.371	1.447
Diabetes	−0.336	0.176	3.636	1	0.057	0.715	0.506	1.009
Hypertension	−0.266	0.173	2.353	1	0.125	0.767	0.546	1.077
Obesity	−19.316	10116.925	0.000	1	0.998	0.000	0.000	.
Heart Disease	21.485	40192.969	0.000	1	1.000	21422620	0.000	.
Hyperlipidemia	−0.473	0.256	3.426	1	0.064	0.623	0.377	1.028
Pulmonary Embolism	−0.337	0.474	0.507	1	0.477	0.714	0.282	1.807
DVT	−0.598	0.661	0.820	1	0.365	0.550	0.151	2.007
Atrial Fibrillation	−0.029	0.244	0.015	1	0.904	0.971	0.602	1.567
Pneumonia	−0.132	0.165	0.640	1	0.424	0.876	0.634	1.211
Dyspnea	−0.499	0.824	0.367	1	0.545	0.607	0.121	3.053
Kidney Disease	0.113	0.304	0.137	1	0.711	1.119	0.617	2.033
CAD	0.260	0.281	0.858	1	0.354	1.298	0.748	2.252
Anemia	−0.714	0.251	8.079	1	0.004	0.490	0.299	0.801
Asthma	−1.135	0.437	6.757	1	0.009	0.321	0.137	0.756
COPD	0.514	0.333	2.383	1	0.123	1.671	0.871	3.208
Respiratory Failure	1.364	0.172	62.640	1	< 0.001	3.913	2.791	5.487
Hospital Floors	0.169	0.039	18.595	1	< 0.001	1.184	1.096	1.278
LOS_IN_DAYS	0.021	0.008	7.046	1	0.008	1.021	1.006	1.037
Ethnicity			1.335	4	0.855			
Ethnicity (1)	−0.177	0.270	0.431	1	0.512	0.838	0.494	1.421
Ethnicity (2)	−0.072	0.181	0.161	1	0.689	0.930	0.653	1.325
Ethnicity (3)	0.154	0.284	0.295	1	0.587	1.167	0.669	2.035
Ethnicity (4)	−0.585	1.125	0.271	1	0.603	0.557	0.061	5.049
Constant	−2.479	0.364	46.355	1	< 0.001	0.084		

a. Variable(s) entered on step 1: Ethnicity.

Summary

After evaluating 1,188 patient charts in the central Queens hospital and authorized to do so, specific parameters were collected and assessed for each COVID-19-positive patient. P-values greater than 0.05 for ethnicity, gender, and comorbidities for the dependent outcome variables medication use, ventilator use, and whether a patient was discharged alive or died in the hospital were not statistically significant. Therefore, minorities had the same rate as non-minorities of being administered a medication to treat COVID-19 symptoms, receiving intubation, and dying of the disease. This fact indicated that central Queens hospital was not biased towards minorities or non-minorities with modalities, such as the use of medications or intubation. With statistically significant values of p less than 0.05 for the length of hospital stay and hospital floor level where COVID-19-positive patients were treated, the study needed to determine if minorities had a higher rate of being given medications or intubated based on their length of stay. The length of hospital stay could be more than two weeks. If White patients and minorities were administered medications with no statistical differences or intubated with no statistical differences and had the same death rate with no statistical differences, then this would be an endpoint in evaluating the modalities and outcomes of the study. All ethnic groups of patients had the same medications available, and all were intubated to the same extent, which showed that the hospital was not biased in treating COVID-19-positive patients. Confounding factors, such as age, gender, comorbidities, length of stay in the hospital, and hospital floor levels where COVID-19- positive patients were treated had an impact on the severity of the disease, and this was not statistically significant between minorities and non-minorities as previously defined in the paper. Patients with comorbidities had the worse treatment patterns, and this should be factored out as confounding factors for the cross-section of the population of central Queens hospital. The cross-section evaluation of the population with all the confounding factors was equally distributed in this study.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of the study was to investigate the treatment modalities and the mortality of the COVID-19-positive patients admitted in the emergency department, ICU, and the different hospital floor levels of a medical facility in Forest Hills, Queens, New York, which was part of the Northwell Health system (Nguyen et al., 2021). The discharge records for adults 18 years to 65 years and older were searched for patients admitted to the hospital from January 1, 2020 to January 1, 2021, who had COVID-19 confirmed by a positive COVID-19 test. Different risk factors were examined, including the patient's age, gender, ethnicity, comorbidities, and length of hospital stay on a primary outcome, in-hospital mortality. The research goal was to examine patient characteristics and outcomes among those treated for COVID-19 at a central Queens hospital medical center and analyze the mortality of the COVID-19-positive patient over the specified period of the pandemic (Nguyen et al., 2021).

The study's findings revealed that those older than 65 with comorbidities, such as heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma had the most significant in-hospital mortality associated with increasing age. The results also showed that patients older than 65 years had a higher rate of dying than younger adults. Furthermore, the death rate was not statistically significant for the various ethnic groups: African Americans or Blacks, Asians, Native Americans or Alaskans, multiethnic, and White patients treated for COVID-19. The data in the study indicated that the mortality rate differed based on age patterns; however, gender had no bearing on the number of patients dying of the disease. Older age, one or more comorbidities, and a long hospital stay had more severe COVID-19 disease outcomes.

Interpretation of the Findings

The purpose was to determine whether an ethnic minority difference in modalities and outcomes existed. The research showed no differences in treatments and non-statistical differences in survival rates. Comorbidities were diversified and included heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, asthma, and patients without any existing medical conditions. The confounding factors were similar in the cross-section of patients being of Caucasian and non-Caucasian backgrounds and were therefore non-contributory after using a binary logistic regression method. The study's *p* value was greater than 0.05, showing no statistical difference between the two groups of Caucasians and non-Caucasians in treatment modalities used nor in death or discharge outcomes. Therefore, no bias was found in treating patients at the central Queens hospital for the given period nor were any modalities held back from specific groups based on their minority status. The following are presumptions for the variables that I examined in the study data.

Age and Gender and COVID-19 Disease Severity

Research has indicated that males were more likely to die from the disease than females and were at a greater risk for worse health outcomes based on their treatment (Jin et al., 2020). Furthermore, being older and having one or more comorbidities were associated with a high mortality rate in hospitalized patients with COVID-19. The medical conditions for hospitalized patients 18 years to 65 years and older were respiratory distress syndrome, acute respiratory failure, coagulation disorders, septic shock, and metabolic acidosis. Patients received supportive care in the ICU, and patients with difficulty in breathing required mechanical ventilation. Patients were of a mean age of 62 years, with no significant age differences between males and females. Moreover, the patients who died were significantly older than 65 years, and 64.9% had heart disease, hypertension, diabetes, or COPD. Overall, hospitalized patients who were older than 65 years, who had medical conditions, and were of the male gender had complications associated with differences in treatments.

In the current study, the risk for mortality increased with age, and older adults were more vulnerable to COVID-19 treatments. Higher in-patient death rates were found among those patients 65 years and older compared with patients aged 18 years to 65 years. Gender did not influence the death rate. The mean age of the COVID-19-positive patients in the study was 57 years, and they were primarily males. Patients older than 65 years had an extended stay length compared with those aged 18 years to 65 years. The age distribution of the COVID-19 patient population at the central Queens hospital and gender were independent covariates and confounders in managing patients with COVID-19 and their mortality.

Ethnicity and COVID-19 Disease Severity

A high number of deaths was found among patients of ethnic minority groups who identify as non-Caucasians (Acosta et al., 2021). Compared with White people, ethnic minorities had many ICU admissions, especially during the pandemic's beginning. The patients had laboratory-confirmed COVID-19 and had a mean length of hospital stays of approximately 14 days. The ethnic distribution of patients treated in medical facilities included 1.4% American Indian or Alaska Native patients, 5.4% Asian, 28.5% Black, and 20.1% Latino. Although hospitalization rates increased across all ethnic groups with age, the highest number of in-patients were found among non-Caucasians receiving treatment than Caucasians (Acosta et al., 2021). Non-Caucasians had the most increased ICU admissions and death rates, and clinical interventions, such as treatments with medications for COVID-19 symptoms, varied between various age groups. Many ethnic minorities had one or more comorbidities, such as heart disease, diabetes, and hypertension, contributing to decreased overall survival.

The current study supports the fact that ethnicity was not a factor regarding COVID-19 treatments. Only a small percentage of COVID-19-positive patients in the study received oral antiviral medications; however, the differences were significant for other drugs administered at the central Queens hospital. When the COVID-19-positive patients were non-Caucasians or Caucasians, health care providers had to exercise caution in prescribing the hospitalized patient's COVID-19 medications. I looked at the patients who survived the illness and the number who died for the different ethnicities who received treatment in the medical facility. The data indicated that more non-Caucasians were seen at the hospital than Caucasians. The percentage of Caucasians discharged alive at the medical facility was 78.1% of the percentage of non-Caucasians admitted with COVID-19. The research project was biased in that the hypothesis indicated that giving specific treatments to Caucasians versus non-Caucasians was different. Consequently, I thought Caucasians might survive or had a higher survival rate than non-Caucasians.

Comorbidities and COVID-19 Disease Severity

Studies have discussed the challenges of treating patients with COVID-19 with comorbidities (Fang et al., 2021). For instance, elderly patients had drug–drug interactions when taking chloroquine and hydroxychloroquine (Back et al., 2021). Increasing age put older patients at a higher risk for medical conditions and a COVID-19 diagnosis. Hospitalized patients who took drugs for COVID-19 had adverse side effects, which required effective management to guide the safe use of COVID-19 therapy (Back et al., 2021). Most drugs caused heart rhythm abnormalities and organ dysfunctions (Fang et al., 2021). Patients with comorbidities had difficulty metabolizing the drugs, which was related to their age. The comorbidity of hospitalized patients had, including heart disease, hypertension, diabetes, and liver and lung problems, were associated with a significant proportion of deaths (Fang et al., 2021). Furthermore, the length of hospital stay was longer for patients with underlying health problems compared with patients without comorbidities (Back et al., 2021). Studies showed that the most common comorbidities were hypertension and diabetes, followed by heart disease and respiratory problems.

The current study had many patients who presented to the central Queens hospital emergency department, ICU, and different hospital floor levels with comorbidities requiring in-patient hospitalizations. In the study, comorbidities that were looked at that were associated with death were heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma. Older patients with comorbidities most likely needed to be admitted to the emergency room. Depending on the severity of their COVID-19 symptoms, they were transferred to the ICU and the different hospital floor levels. The association between having comorbid medical problems did not differ based on a patient's ethnicity. Among Caucasian and non-Caucasians, the study found that the ethnic group of the patient did not increase the likelihood of having a comorbidity. At the hospital located in Forest Hills, Queens, a higher proportion of patients with anemia, asthma, and respiratory failure required in-patient care. White patient's comorbidities did not significantly differ from other patients of another ethnicity.

Comorbidities were essential to the study because they explained the confounding factors. However, since this research looked at a cross-section of people admitted to the central Queens hospital for a certain period, comorbidities were most likely equally distributed. I noted them and saw that Asians, diverse multiethnic patients, and African Americans or Blacks had the same number of comorbidities as Whites; however, this did not significantly affect the survival of the COVID-19-positive patients.

Medication Use and COVID-19 Disease Severity

During the early phases of the COVID-19 pandemic, the medication dexamethasone increased from 1.4% to 67.5% for patients diagnosed with COVID-19 (Watanabe et al., 2021). Furthermore, remdesivir use increased from 4.9% to 62.5%, and tocilizumab use increased from 2.4% to 2.9% during the ongoing crisis. More than 40% of hospitalized patients received hydroxychloroquine (Watanabe et al., 2021). A small percentage of patients were administered dexamethasone. Although dexamethasone and remdesivir use grew substantially during the pandemic's early months, their availability increased because the drugs were tested in clinical trials (Watanabe et al., 2021). Heparin use was stable over the remainder of the pandemic. Hydroxychloroquine was given in the beginning months of the pandemic for emergency use authorization (Watanabe et al., 2021). Still, the use of the drug decreased and had no benefit for the treatment of COVID-19 hospitalized patients (Watanabe et al., 2021).

The current study utilized electronic medical records and analyzed the charts of COVID-19-positive patients from the central Queens hospital from January 1, 2020 to January 1, 2021. I looked at the use of medications to treat COVID-19 signs and symptoms by ethnicity. During the pandemic's early phases most patients across all ethnic groups were given hydroxychloroquine for emergency use. The drugs remdesivir and dexamethasone were in low supply but were the most commonly used drugs prescribed in the in-patient setting. Although an anti-viral drug like paxlovid and an immunomodulator medication called tocilizumab were given, the use of the medications was infrequent. Caucasians, such as Whites, received hydroxychloroquine to the same extent as non-Caucasians, such as African Americans or Blacks, Asians, and multiethnic patients. African American or Black patients received remdesivir and dexamethasone like White patients. Using the medications to treat COVID-19 reduced the incidence and prevalence of infections and decreased the number of patients dying from COVID-19.

Ethnic minorities and Caucasians were more likely to receive prescriptions for COVID-19 in the ICU and the various patient floors of the hospital located in Forest Hills, Queens. The equal access to in-patient medications like antiviral drugs and medications used for emergency authorization decreased ethnic inequalities in the treatment of COVID-19, even though the ethnic group of a patient had no statistically significant difference in medication use.

Mechanical Ventilation Use and COVID-19 Disease Severity

Hospitalized patients needing mechanical ventilation were from the ICU (Grasselli et al., 2021). Patients transferred from the emergency department to the ICU received mechanical ventilation within 24 hours of admission (Grasselli et al., 2021). The ventilators were needed for inpatient use on the floors of the medical facility. Many patients in urgent need of mechanical ventilation required days to weeks of medical care. The supply of mechanical ventilators in most hospitals throughout the United States was limited (Dar et al., 2021). Selecting patients to be intubated had been a concern since the onset of the pandemic. The administration of oxygen to patients had risks, such as positive airway pressure aerosolizing the virus. Hospitals had to decrease the ventilator usage demand and improve patient outcomes (Dar et al., 2021). Health care providers were required to operate and troubleshoot the machine that delivers anesthetics. For patients receiving mechanical ventilation, a significant number of deaths occurred (Dar et al., 2021). Most mechanically ventilated patients were hypoxemic when they presented to the hospital’s emergency department. Critically ill patients should be continuously monitored when they receive respiratory support because they had heterogeneous gas exchange and respiratory mechanics during the first 24 hours of ICU admission (Grasselli et al., 2021).

The current study included data from the early part of the pandemic when most patients needed ventilator support. African American or Black, Asian, multiethnic, and White patients required mechanical ventilation to the greatest extent. However, no ethnic differences were observed in who received ventilator support. The majority of patients on mechanical ventilation were treated in the emergency department, ICU, and different floor levels of the hospital. Clinical outcomes during a patient's length of stay involved being placed on a ventilator. The longer the patient's length of stay, the more dependent they were on the ventilator and the higher the mortality rate. When patients were admitted to the hospital emergency room, clinical factors determined which patients would receive mechanical ventilation. Among the patients receiving mechanical ventilation, 33.9% had diabetes, 51.9% had hypertension, 1.2% had obesity, 0.1% had heart disease, 13.3% had hyperlipidemia, 3.9% had pulmonary embolism, 2.3% had DVT, 11.4% had atrial fibrillation, 45.9% had pneumonia, 1.6% had dyspnea, 7.7% had kidney disease, 7.7% had CAD, 15.8% had anemia, 6.1% had asthma, 4.8% had COPD, and 45.3% had respiratory failure. Having a comorbidity was associated with receipt of mechanical ventilation but not related to the number of deaths from COVID-19 when controlling for age and gender. Finally, the most significant number of mechanical ventilation patients died from the disease.

Length of Stay and COVID-19 Disease Severity

The length of stay for hospitalized patients with COVID-19 determined the severity of the disease. Predicting a patient's length of stay was essential to ensure that beds were enough in the hospital to care for infected patients. The length of stay was determined from hospital admission to being discharged alive or dying in the medical facility (Vekaria et al., 2021). In the study, the length of stay was mostly less than 1 day when the patient was admitted to the emergency department. The length of stay increased as the patient was transferred to the ICU and various hospital floors. The length of stay was less for patients not admitted to the ICU than those in the ICU (Vekaria et al., 2021). The patient's length of stay depended on the severity of the disease. If the patient went to the ICU or a hospital floor, it was accounted for, as well as predictors, such as the patient's age, gender, and whether the patient was lost to follow-up. The predictors impacted the length of stay distributions (Vekaria et al., 2021). Furthermore, the length of stay depended on treatment changes, and the estimated length of stay was approximated based on the binary logistic regression method used in the study. Increasing age made the length of stay longer (Vekaria et al., 2021). The length of stay only applied to patients admitted to the hospital with COVID-19 infections.

In the current study, the length of stay of in-patients at the central Queens hospital from January 1, 2020 to January 1, 2021 was explored. The hospital length of stay predicted patient outcomes and determined the severity of the illness (Lagoe et al., 2021). A long length of stay meant that the COVID-19-positive patient had severe disease signs and symptoms. The study focused on using mechanical ventilation and medications to decrease a COVID-19-positive patient's length of stay in the emergency department, ICU, and various floors of the medical facility. The patient with COVID-19's length of hospital stays discharged alive or dead at the end of the study was investigated during the patient's period of hospitalization and for those patients who received invasive mechanical ventilation or a medication, such as remdesivir for the different age groups of patients of both genders at the central Queens hospital. For COVID-19-positive patients admitted to the emergency department and routinely discharged, their length of stay was less than 1 day. However, their length of stay increased when the patient was transferred to the ICU or a hospital floor. In this study, a patient's length of stay ranged from 1 day to 116 days. The mean length of stay was 7.85 days. Some patients in the hospital were transferred to other medical facilities. The longer the patient's length of stay, the less chance they will survive in the hospital leading to an increased chance of mortality (Lagoe et al., 2021).

Furthermore, patients with comorbidities, such as heart disease, diabetes, hypertension, obesity, hyperlipidemia, clotting disorders (e.g., pulmonary embolism and DVT), atrial fibrillation, pneumonia, respiratory failure, dyspnea, kidney disease, COPD, CAD, anemia, and asthma were at an increased risk for a prolonged length of stay (Siddique et al., 2021). Consequently, when a patient's length of stay was long, they had the potential to encounter adverse events related to being hospitalized and discharging them from the hospital was delayed. Increased length of stay was associated with infections acquired in the hospital, more complications, and an increased death rate (Siddique et al., 2021). In this study, the patients with the most extended length of stay were older than 65 years with comorbidities because they had the worst outcomes. The study showed that the length of stay differed for Caucasians and non-Caucasians. The patients who were African American or Black, Asian, and multiethnic patients had a longer length of stay than White patients. The study also had a gender-related increase in mortality, where females had a longer length of stay than males. For patients taking medications to treat their COVID-19 symptoms, their lengths of stay decreased when adjusting for factors such as the patient's gender, emergency admission status, and the administration of medications for co-existing medical conditions. By and large, when hospital stays were extended, more beds in the hospital were occupied, contributing to reduced treatment outcomes for COVID-19- positive patients in a high-risk population at a central Queens hospital.

Furthermore, by going through 1,188 COVID-19-positive patient charts, a bell-shaped curve showed the average length of hospital stay, the least hospital stays, and the most hospital stay for the mean, median, and mode values. The mean was 7.85 days, the median was 5.00 days, and the mode was 2 days for the different lengths of stay, which varied for the diverse ethnic population at the central Queens hospital. The average length of stay was different for Whites versus African Americans or Blacks versus Asians versus Native American or Alaskan patients.

Mortality and COVID-19 Disease Severity

Ethnic minority status impacted mortality where non-Caucasians had more deaths than Caucasians. All-cause mortality was more significant in hospitalized positive COVID-19 patients receiving treatment with pre-existing medical conditions. White individuals had fewer COVID-19 deaths among ethnic minority patients 25 years and older (Feldman & Bassett, 2021). Different ethnic minority groups had risk factors for COVID-19 exposure and infection fatality rates based on prior health status. Furthermore, the fact that ethnic minorities had higher mortality rates contributed to ethnic inequalities where age and gender played a role (Feldman & Bassett, 2021). The study was a cross-sectional analysis examining ethnic minorities being treated in hospitals across the United States.

Moreover, the deaths due to COVID-19 were stratified by ethnicity, age, and sex. Ethnicity was characterized in the study as African American or Black, Asian, Hispanic, and non-Hispanic (Feldman & Bassett, 2021). Hospitalized patients older than 75 years had a higher mortality rate than younger patients, and ethnic minority men had a more significant number of deaths than ethnic minority women. African American or Black patients had the highest death rates, followed by Asians and Hispanic or Latino hospitalized patients with COVID-19 (Feldman & Bassett, 2021). Subgroups of ethnic minorities stratified by age groups, which included 18 years to 65 years and older, had higher mortality than Caucasians. In most studies, mortality was underestimated, which was not accurately reported; however, the actual number of COVID-19 deaths was much higher during the early period of the pandemic (Feldman & Bassett, 2021).

The current study found that the mortality rates at the central Queens hospital for patients treated for the disease was affected by age, pre-existing medical conditions, length of hospital stay, and the hospital floor level where COVID-19-positive patients were treated. As seen in this study, the death rates for COVID-19-treated patients older than 65 years with underlying comorbidities was the highest for the hospitalized COVID-19-positive patients. The patient's ethnicity did not matter regarding the patient's risk of dying. The results of the retrospective cross-sectional study indicated that male patients treated at the central Queens hospital had higher mortality rates than female patients. The study said that the ethnic group of the patient was not statistically significant in increasing their risk of dying from COVID-19 when given specific treatment modalities. Caucasian and non-Caucasian patients 65 years and older had a similar risk of dying from the disease. The data revealed that patients with pre-existing medical conditions had a more challenging time surviving the illness than patients without medical conditions. Decreasing the morbidity and mortality rates in patients with COVID-19 can help end the high COVID-19 death rates. The study examined the morbidity and mortality statistics at the central Queens hospital by looking at the number of COVID-19-positive patients admitted to the hospital's emergency department, ICU, and different hospital floors and placed on respiratory support, such as invasive mechanical ventilation or medications. Treatments for COVID-19 were currently being used to reduce the number of patients dying from the disease. Based on the study's findings, some hospitalized patients with COVID-19 given the standard therapy did improve their medical condition. The research in this study explained how treatments for acute and severe COVID-19 disease could end the high COVID-19 death rates for patients at a central Queens hospital. However, the mortality rate for patients at the central Queens hospital was similar to other studies reported in the literature (Nguyen et al., 2021).

Theoretical Framework

The HBM was used as the theoretical framework to explain various treatments and outcomes among COVID-19-positive patients. The six constructs of the HBM included: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action (Kim & Kim, 2020). Implementing these six constructs benefited the COVID-19-positive patient receiving treatment by a healthcare provider. Individuals had to take preventive health measures to decrease their risk of infection (Alagili & Ramashmous, 2021). The COVID-19-positive patient had to adhere to their treatment regimen, and they had to believe through increased knowledge that the treatment modality worked in preventing the disease (Kim & Kim, 2020). Furthermore, the HBM explained the influence of variables, such as the patient's age, gender, ethnicity, and comorbidities on a person's willingness to take on protective health behaviors recommended by their healthcare provider when they treated the patient with COVID-19 (Kim & Kim, 2020). Perceived susceptibility and severity varied based on the age of the COVID-19 positive patient and therefore the patient had to adopt certain health behaviors (Berchard et al., 2021). Patients with high perceived susceptibility were more likely to have comorbidities which increased their risk of contracting the illness that led to the worse health outcomes. The application of perceived severity enabled an individual to believe that the disease was severe. The severity of the disease depended on the hospital floor level where they were treated. Once the patient overcame their signs and symptoms, they could decrease the chance of the infection reoccurring by engaging in healthy behaviors (Kim & Kim, 2020). Older age groups had a harder time overcoming the signs and symptoms of the disease and a higher risk for mortality. Therefore, there was an age-related increase in the susceptibility and severity of the disease (Berchard et al., 2021). Perceived benefits told the COVID-19-positive patient that the treatment modality received in the hospital helped the patient and improved their well-being (Kim & Kim, 2020). Perceived barriers helped a patient with COVID-19 to tolerate the use of a medication or ventilation brought about by a change in one's behavior through the patient's interaction with their healthcare provider (Kim & Kim, 2020). In the study all patients were given the same treatment modality and it did not depend on their ethnicity. Self-efficacy was treated for the disease to improve health outcomes. In self-efficacy men and women were equally likely to comply with health measures if they had the signs and symptoms of the virus. Since men and women considered COVID-19 to be a serious health problem there were gender differences in their beliefs in mortality and existing comorbidities which made women more likely than men to seek out the care of a healthcare provider because they had more worries about the health risks of the disease. Cues to action involved healthcare providers giving information to a positive COVID-19 patient, motivating a patient to be actively involved in patient care. In cues to action there were gender differences in the various beliefs and behaviors exhibited among men and women when they were shared information about the COVID-19 treatment given to them during the pandemic (Kim & Kim, 2020). In cues to action older adults had greater concerns about their health status when it came to being infected with the disease, hospitalizations, and deaths compared to adolescents and young COVID-19 positive patients (Berchard et al., 2021). The explanatory variables of the HBM played roles in the treatment that COVID-19-positive patients got when they communicated with their healthcare provider (Alagili & Ramashmous, 2021). Age, gender, ethnicity, and comorbidities were the modifying factors that were associated with seeking the care of a healthcare provider for better health outcomes.

Limitations of the Study

The study included only hospitalized patients with COVID-19 at the central Queens hospital in Forest Hills, Queens (Richardson et al., 2020). Even though the study involved a diverse patient population in a distinct geographic area, other studies in the New York metropolitan area looked at treatment modalities and the mortality of COVID-19-positive patients based on ethnicity (Richardson et al., 2020). Furthermore, the study evaluated demographic and clinical data in the patient's electronic medical records instead of conducting a comprehensive chart review for each COVID-19-positive patient. The study could not gather enough detail on each hospitalized infected person's individual demographic and clinical characteristics (Richardson et al., 2020). The fact that a significant variation existed in the length of stay in the hospital for each COVID-19-positive patient might have biased the conclusions drawn from the study (Richardson et al., 2020).

Moreover, the high mortality rate for COVID-19-positive patients who were given medications or had received mechanical ventilation older than 65 years might have biased the study results (Richardson et al., 2020). Besides, clinical outcome data were available for all patients admitted to the central Queens hospital with a presumptive diagnosis of COVID-19 confirmed by laboratory results (Richardson et al., 2020).

Therefore, COVID-19 testing was available for all patients admitted to the central Queens hospital with the disease; thus, no bias occurred in testing suspected individuals who may or may not have the signs and symptoms of COVID-19 (Apea et al., 2021). However, during the early phase of the COVID-19 crisis, methods to test COVID-19 were not fully established but became readily available during the later stages of the pandemic (Nyugen et al., 2021). The downside of testing was that the COVID-19 test method gave false positives in which they classified vulnerable people as having the disease when they did not have the illness. The ethnic categories of the hospital only applied to this single location but lacked consideration of the vast heterogeneity within ethnic groups (Apea et al., 2021).

Consequently, the study focused mainly on COVID-19-positive adult patients. Minimal data were available on pediatric patients from labor and delivery; therefore, the study results could be biased because of the age groups in the investigated research (Sanders et al., 2020). Equally important, the medications used to treat COVID-19-positive patients were tested in small clinical trials with less than 250 patients, introducing high degrees of bias because of the magnitude of the treatment effect sizes (Sanders et al., 2020). Finally, new research findings and recommendations were constantly evolving regarding the treatment modalities for COVID-19, impacting the interpretation of the study's findings (Sanders et al., 2020).

Recommendations

More studies were needed to examine the association between COVID-19, ethnicity, and specific clinical outcomes for patients admitted to a medical facility (Sze et al., 2020). Non-Caucasians patients had a higher likelihood of becoming infected with COVID-19 than Caucasians. The risk of infection existed in patients of a specific ethnicity. Besides looking at African Americans or Blacks, Latinos, Hispanics, and Asians, further research were needed to be conducted on patients receiving treatment modalities of other ethnicities (Sze et al., 2020). For example, no peer-reviewed studies had investigated Hispanics receiving illness treatment. Besides looking at patients with COVID-19, more studies should be conducted to look at hospitalized individuals who do not have the disease (Sze et al., 2020). Other variables besides age, gender, ethnicity, and comorbidities had to assessed, such as the patient’s occupation, household composition, and education related to its impact on the patient’s mortality as an outcome factor. Only two studies in the literature evaluated the influence of a person’s job on being infected with the virus. However, no studies considered it a confounder for dying from the illness (Sze et al., 2020).

Studies should not only look at mortality as an outcome variable but also the risk of infection (Sze et al., 2020). Furthermore, this study only looked at a single geographic region located in a community with a highly dense population of ethnic minorities (Sze et al., 2020). Further research that investigates the risk of death for COVID-19-positive patients hospitalized in a medical facility in other areas throughout the United States with ethnic minorities was essential (Sze et al., 2020). Future studies should state the effect of the transmission of the disease had on the death of a COVID-19-positive patient. Other studies should look at prevention and control measures that a COVID-19-positive patient should take to limit their risk of becoming infected with the virus (Sze et al., 2020).

Ethnic minorities were less likely to implement public health measures, get tested, and seek care when having the signs and symptoms of the disease (Sze et al., 2020).

Furthermore, additional studies could look at the unfair treatment of people of a particular ethnicity and discrimination as contributing to ethnic minorities having the worst health outcomes (Sze et al., 2020). Part of the reasons ethnic minorities had the worst health outcomes was their lack of trust in the healthcare system, barriers to access to care, and inequities in treatment. Studies that split large general categories of ethnicity into more specific ethnic groups were necessary (Sze et al., 2020). Additional studies should include mortality as an outcome, where ethnic minority groups with COVID-19 were disaggregated by ethnicity. A significant number of studies should clearly define a person’s ethnicity, and a standardized approach to ethnicity should exist across studies (Sze et al., 2020). Apart from looking at a diverse ethnic patient population in this study, further studies that examine ethnically diverse people in other countries were necessary. A robust investigation in different geographic locations where Whites do not make up most of the patient population would shed light on clinical outcomes where severe disease or death plays a role (Sze et al., 2020).

Implications

During the coronavirus crisis, inequities must be addressed to improve a patient’s health status (Wiltz et al., 2022). Preventive measures, such as administering medications and ventilatory support, were the best to prevent a person from becoming infected with the virus (Wiltz et al., 2022). COVID-19 drugs decreased the number of people dying from the disease and reduced hospital stress. Furthermore, positive social change brought about more equitable health outcomes (Wiltz et al., 2022). Programs addressed the specific needs of the ethnic minority patient population who received medical care for the illness (Wiltz et al., 2022). Consequently, patients of all ethnic groups had to be treated equally, and barriers to accessing healthcare should be reduced. Patient and clinical awareness reduced ethnic disparities in COVID-19 treatment (Wiltz et al., 2022).

At the individual, community, and organizational level, actions had to be taken to implement effective interventions, which brought about positive social change (Wiltz et al., 2022). Bringing healthcare to ethnic minorities increased their treatments and decreased severe health outcomes. Communities improved outpatient therapies that are delivered to chronically ill patients with the disease. The medical condition was better managed if the patient's age, gender, ethnicity, and underlying comorbidities were considered (Wiltz et al., 2022). The administration of a medication, such as remdesivir helped patients at high risk for the disease. The drug helped patients infected with COVID-19 and its variants (Wiltz et al., 2022). At the individual level of care, a healthcare provider treated ethnically diverse patients with COVID-19. The focus should have been on treating minority groups, including African Americans or Blacks, Asians, and individuals of other ethnicities who were given treatment for COVID-19 less often than White patients in an in-patient hospital setting (Wiltz et al., 2022).

The practice recommendations depended on evidence-based medicine, where the healthcare provider made clinical decisions that the treatment benefited the COVID-19-positive patient (Carley et al., 2020). The clinician should answer whether a specific intervention worked for the patient. Furthermore, a range of treatments had a theoretical basis. Consequently, most medications had been proven effective in humans, posing minimal to no risk (Carley et al., 2020). The use of a medication or ventilation posed minimal harm to a COVID-19-positive patient, and therefore, it was well tolerated by patients (Carley et al., 2020). When a person was sick with COVID-19, they wanted the best treatment option available, which the clinician advocated for based on their medical expertise. The healthcare provider recommended adopting therapies such as a medication like remdesivir and mechanical ventilation with good intentions in the patient's treatment (Carley et al., 2020). The various therapies offered hope to the COVID-19-positive patient during the crisis. Enrolling human beings in clinical trials was the best way to evaluate treatments and their impact on outcomes (Carley et al., 2020). Through practice, clinicians better understand the disease and approaches to diagnosing the medical condition using different treatment modalities (Carley et al., 2020).

Conclusion

At the central Queens hospital, African Americans or Blacks and multiethnic people were more likely to be hospitalized. No statistically significant difference was found between African American or Black patients and patients of other ethnic groups, such as Whites, among those receiving a medication or on ventilator support. If a patient was older than 65 years and had two or more comorbidities, their chances of death increased. However, this was consistent across all ethnic groups. High rates of hypertension, pneumonia, respiratory failure, anemia, and asthma among older patients had the worst health outcomes. Furthermore, most patients who needed mechanical ventilation were predominant among those who had difficulty breathing. African

American or Black patients were no more likely than White patients to be on invasive mechanical ventilation. A high number of patients in this study admitted to the ICU required intubation. African Americans or Blacks were no more likely than Whites to have the worst survival rates once hospitalized at the hospital located in Forest Hills, Queens.

Being African American or Black was not associated with an increase in mortality compared with White patients. African Americans or Blacks and multiethnic patients were most likely to test positive for COVID-19. African American or Black and multiethnic patients had more significant COVID-19 emergency department and ICU admissions than White patients. To treat COVID-19 signs and symptoms, we should administer the medication dexamethasone to Whites and ethnic minorities. Other COVID-19 drugs that were used included remdesivir, hydroxychloroquine, and tocilizumab. All drugs used to treat COVID-19 signs and symptoms were given equally to all ethnic groups of patients at the medical facility. The median hospital and ICU length of hospital stay were different among the various ethnic groups. Ethnicity was not related to mortality but rather to the COVID-19-positive patient's length of hospital stay.

The study documented the treatments received for each ethnic group. No differences were found in treatments received for ethnic groups of Asians, Hispanics, African Americans or Blacks, and Whites. No differences were found in outcomes for each of the ethnic groups, which included African Americans or Blacks, Whites, Asians, and Hispanics. The outcome was whether they died in the hospital or survived their illness. No differences were observed in the death rate among various ethnic groups of patients hospitalized at the central Queens hospital.

Since the p-value for the ethnic groups was greater than 0.05, the null hypothesis was not defeated and was not statistically significant. Therefore, no bias occurred in ethnicity of who received what treatment, and no differences were found between the various groups in the COVID-19-positive patient's survival. The hospital treated the patient's the same way, and a patient's ethnicity did not affect treatment. Although no ethnic differences were found in treatments, differences in outcomes were observed. The data showed a difference between the ethnic groups in length of stay. While the p-value showed no significant difference between the ethnicity of the patient and the treatment they received, an increased length of stay for those patients who were ethnic minorities, such as African Americans or Blacks, occurred. This pointed to the fact that different ethnicities had different genetic backgrounds that made them more or less susceptible to the virus. That being said there was no increase in mortality in these ethnic groups. Furthermore, ethnicity and genetic background of the COVID-19-positive patients might affect the disease's mortality among certain groups. Further research should be conducted to determine how these ethnic and genetic differences affect the virulence of the virus.

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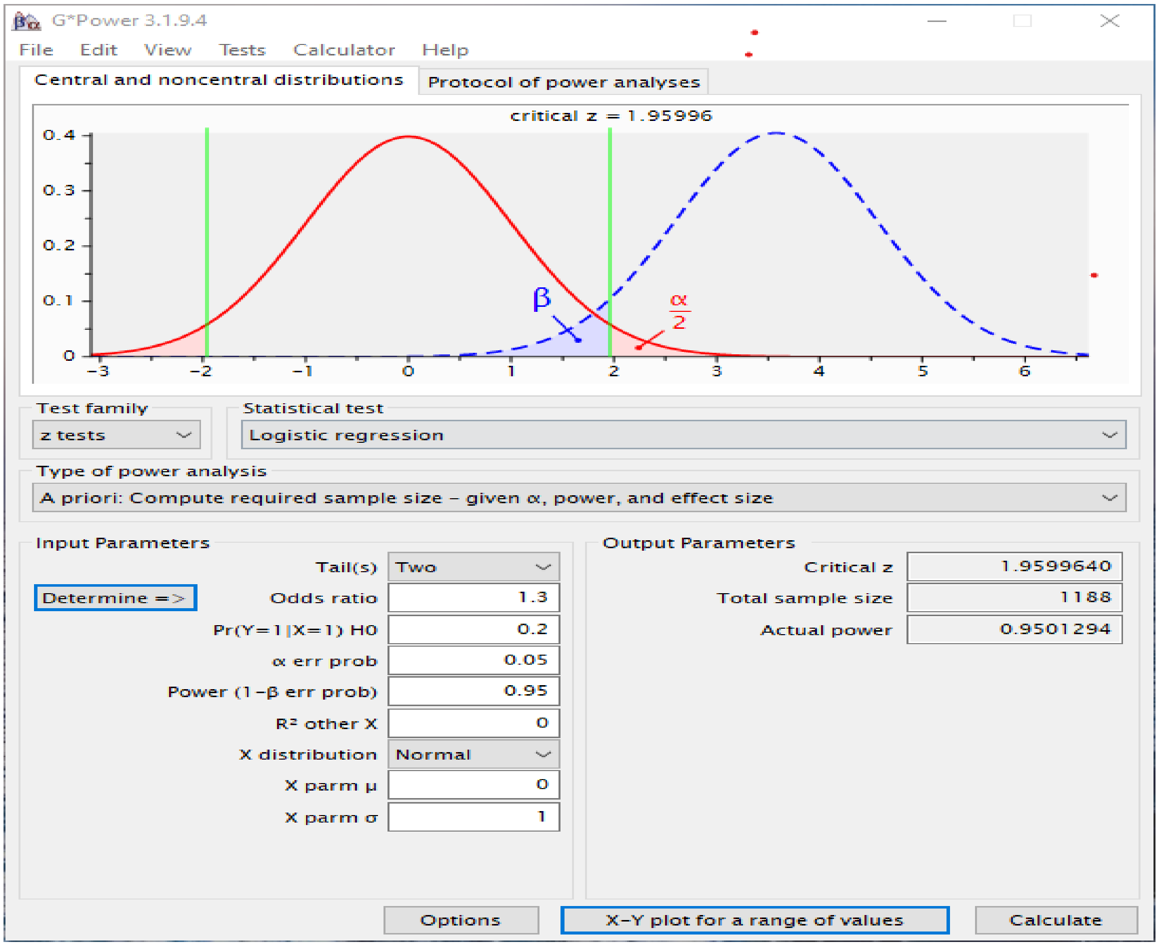
Appendix: G-Power Calculation



Note. To detect an odds ratio of 1.3 using a binary logistic regression, with an alpha of 0.05 and power of 0.95, a sample size of 1,188 was needed. Having a power of 0.95 with an alpha of 0.05 allowed the researcher to target the population necessary in defending against the null hypothesis. Increasing the number of positive COVID-19 patients to a total sample size of greater than 1,188 could increase the power of the study even more.