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The Association Between Behavior Disorders and Return Visit to the Emergency Department

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2019

Abstract

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MHA, Roberts Wesleyan College, 2017

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Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

Presently, extensive research supporting the overcrowding of emergency departments (EDs) and behavior disorder patients presenting to EDs are prevalent. There exists a knowledge gap between specific behavior disorders diagnoses associated to repeated visits to the ED. The purpose of this quantitative study was to address whether a relationship exists between patients with psychotic and/or substance abuse disorders and the repeated ED visits within 72 hours. The Andersen Behavioral framework model and the secondary data were used in the study. The cross-sectional archival data from the 2016 National Ambulatory Medical Care Survey was analyzed by using cross-tabulation with the χ^2 test followed by multiple logistic regression analysis. The author found that the primary independent variables were not significant in (un)weighted multivariate results. However, the primary independent variables were statistically significant in the unweighted cross tabulation analyses, along with the covariates of homelessness, geographical region, and gender. The findings also showed a strong likelihood of return to the ED for the primary independent variables and covariates. The implications of this study with regard to social change and health care practices are providing proper outpatient resources through behavior disorder urgent care facilities, behavior disorder travel clinics, follow-up communications directly to the patients' care managers, and creating a treatment team, which will decrease future financial effects on the healthcare system.

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Dedication

I dedicate my dissertation to my sons Vuong, Marco, and D'nato who believed in my dream to pursue my doctoral degree. My children have been my inspiration throughout the pursuit of my doctoral degree. I want them to know that through hard work and dedication anything can be accomplished. To my family and friends thank you for the wonderful words of encouragement throughout my doctoral journey!

Acknowledgments

I would like to give my deepest thanks to my chair, Dr. James Rohrer for his guidance and support throughout my dissertation process. Also, I would like to humbly thank my committee member Dr. Lee Bewley for his remarkable feedback that molded me as a scholar through this process. Thank you for being a wealth of knowledge and have an immense amount of patients through this wonderful process.

Table of Contents

List of Tables

List of Figures

Section 1: Foundation of the Study and Literature Review

Introduction

In the United States, as many as one in four adults have behavior disorders (Capp et al., 2016). There was a staggering high rate of emergency department use by those patients with behavior disorders other than those patients without behavior disorders (Capp et al., 2016). Patients with behavior disorders use the emergency department to treat other comorbidities that are exacerbated by their behavior disorders (Capp et al., 2016).

The comorbidities that are exacerbated by the patients with behavior disorders are those such as anxiety, homelessness, and substance abuse (Capp et al., 2016). The youth and adolescent population with behavior disorders have showed a high rate of repeated emergency department use (Gill et al., 2016). The youth and adolescent population with behavior disorders experience a lack of insurance, poverty, and they reside in urban/rural areas that contribute toward the increase of emergency department use for behavior disorder diagnosis (Gill et al., 2016).

Problem Statement

There is extensive empirical research supporting emergency department overcrowding due to mental health patients and outcomes related to their treatments (Nok et al., 2016). However, there is minimal empirical research showing the correlation between specific behavioral disorders and the repeated use of the emergency department. Patients who suffer from behavior disorders such as substance abuse, mental health disease, and alcoholism show repeated use of the emergency department as a primary care source (Nok et al., 2016). According to Nok et al. (2016), the populations affected are usually those that reside in rural or urban areas. That patient population is seen in the emergency department

so frequently that their care is being mishandled or goes unnoticed within the care provided that leads to poor discharges (Soril et al., 2015). According to Gill et al. (2016), more than 76% of patients, both youth and adults, have their first contact with the emergency department due to the lack of access to outpatient facilities to treat their behavior disorder. According to the Substance Abuse and Mental Health Services Administration (SAMHSA; 2016), 93% of people with behavior disorders and mental health disorder conditions are aged 12 years or older go without the proper treatment.

Purpose of the Study

My purpose in this study was to establish if a relationship existed between increased use of repeated emergency department visits within the last 72 hours and patients with behavior disorders. My focus in this study was to investigate whether patients with particular behavior disorders choose to use the emergency department more frequently after controlling for the covariates of age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas (Lam et al., 2016; Lee et al., 2017; Soril et al., 2015). The covariates that fell within the predisposing factor were gender, age, and race/ethnicity. The covariate that was deemed to be an enabling factor was homelessness, insurance coverage, and rural/urban areas. The covariate that was a perceived need factor was the behavior disorder diagnosis.

Research Question(s) and Hypotheses

In this study, I used the following research questions and hypotheses:

R1: Is there a relationship between being diagnosed with a psychotic disorder and repeated visits to the emergency department with 72 hours of first ED visit?

$H_0$1: There is no statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

H_a1: There is a statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

R2: Is there a relationship between being diagnosed with a substance abuse disorder and repeated visits to the emergency department with 72 hours of first ED visit?

$H_0$2: There is no statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED.

H_a2: There is a statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

Theoretical Framework

The theoretical framework for the analysis was the Andersen Behavioral Model of healthcare use (Andersen, 1995). Andersen (1995) further stated that there exist patterns of use dependent on factors such as illness levels, age or sex composition, presence or absence of health facilities, and income. In the model, Andersen further stated that there are three determinants of healthcare use: predisposing, enabling factors, and perceived need factor (Andersen, 1995). The Andersen Behavioral Model of Health Care supported my study by aiding the connection between specific behaviors disorders and repeated emergency room use. Among those behavior disorders, this study reviewed the covariates, age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas (Lam

et al., 2016; Lee et al., 2017; Soril et al., 2015). The covariates that fell within the predisposing factor were gender, age, and race/ethnicity. The covariates that were deemed to be an enabling factor were homelessness, insurance coverage, and rural/urban areas. The covariate that was a perceived need factor were the behavior disorder diagnosis.

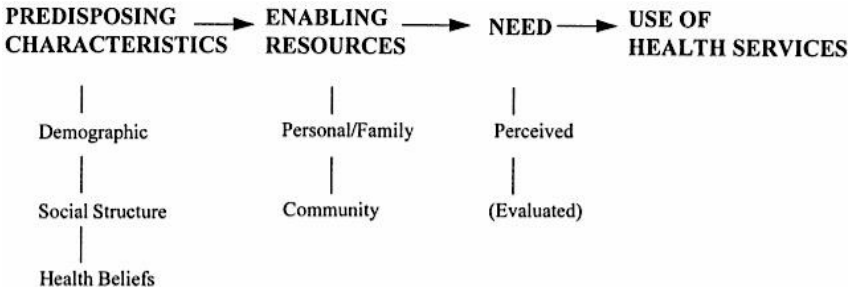

Figure 1. Andersen behavioral model of health services use. Adapted from Anderson (1995). Copyright 1995 by the American Sociological Association.

Significance

My goal in this study was to contribute toward the enhancement of performances and services for patients with behavior disorders in the emergency department. In this study, I provided insight into knowledge gaps for patients with behavior disorders such as substance abuse, mental health disease, and repeated use of the emergency department for treatment. Uncovering the knowledge gaps would allow health administrators to have relevant data to create enhanced training programs for mental health professionals treating patients with behavior disorders in the emergency department. As a society, it is essential to continue to focus on providing proper care for patients of all ages who have behavior disorder conditions

Nature of the Study

To establish the correlation between behavior disorders and use of the emergency department, this quantitative study is a retrospective analysis of archival public use data. I obtained the secondary data from the survey provided through the Centers for Disease Control's National Hospital Ambulatory Medical Care Survey 2016 (NHAMCS). The link to the dataset is https://www.cdc.gov/nchs/ahcd/datasets_documentation_related.htm.

Literature Search Strategy

I used the following databases through the Walden University Library for this study: PubMed, MEDLINE with full text, SAGE Knowledge (formerly SAGE Encyclopedia), Child Stats, CINAHL Plus with Full Text, EBSCO eBooks, ProQuest Central, ProQuest Health & Medical Collection, PsycARTICLES, Psychology Databases Combined Search, SAGE Journals (formerly SAGE Premier), and Thoreau Multi-Database Search. I also used Rochester Regional Health Medical library, Google Scholar, Google, and SAMHSA website. The following are the key terms that I used for the search: *urban, rural, adolescent, youth, elderly, urban cities, reservations, emergency department, behavior disorder, mental health, bipolar, schizophrenia, substance abuse, opioids, adults, male, female, insurance, Medicaid, Medicare, utilization, race, ethnicity, poverty, psychosis, lack of insurance coverage, quantitative,* and *SAMHSA outcome reports.* The literature search conducted was performed with an emphasis on peer-reviewed primary publications with a period spanning of 5 years (2013-2018).

Literature Review Related to Key Variables and Covariates

Population

In a national survey, 93% of people with behavior disorders and mental health disorders aged 12 years or older went without proper mental health treatment through

outpatient facilities, which resulted in emergency department visits (SAMHSA; 2016). Many patients with behavior disorders had other contributing factors such as homelessness, substance abuse, insurance issues, and demographic limitations that contribute toward increased emergency room visits (Bharel et al., 2017). This study attempted to fill a gap in the literature by focusing on the correlation between behavior disorders and use of the emergency department.

Repeated Visit to the Emergency department

Duseja et al. (2015) attempted to address revisit rates to the emergency department or hospitals after an index emergency department visit. Duseja et al. (2015) used secondary data from the Healthcare Cost and Utilization Project (HCUP), State Emergency department Database (SEDD), and State Inpatient Database (SID) to measure the rate of revisits to the emergency department for adults who were discharged to their homes after an index emergency department visit. Duseja et al. (2015) measured the cost associated with revisits to the emergency department after initial index emergency department visit. Duseja et al. performed a logistic regression model that included patient-level data with covariates of age, sex, insurance status, and the Charlson comorbidity index. The results provided from the study showed that the revisit rate within 3 days or 72 hours was 8.2% with a 29% of the revisit involved in an admission and 32% of revisits occurred at a different hospital from the index emergency department visit (Duseja et al., 2015). The study further concluded that public hospitals had the highest revisit rates compared with for-profit and private nonprofit hospitals (Duseja et al., 2015). Duseja et al. further stated that cost of revisits were greater than the index visit costs of patients with and without revisits by 117.7%. The limitations of this study was found in the data only being from six states and did not capture

out of state revisit (Duseja et al., 2015). The findings of this study showed that revisits are expensive and seemed to be twice as frequent as the index emergency department visit.

Gill et al. (2016) examined whether or not there is an existing relationship between patients with behaviors disorders to the increase use of the emergency department. The focus was on a tri-level of areas based on several different aspects. The first level investigated whether or not patients with specific behavior disorders tended not to receive treatment in an outpatient facility. The second level investigated whether patients with particular behavior disorders resorted to using the emergency department due to the location. The final area identified what the causes were for the patients with specific behavior disorders, ultimately using the emergency department as a source for primary care (Gill et al., 2016). Gill et al. showed limitations in the integrity of the data collected due to patients not disclosing all of their demographic information. The findings of this study showed that patients with behavior disorders felt that the emergency department was necessary method for treatment.

Smith, Stocks, and Santora (2014) sought to understand what caused hospital readmission and emergency department revisits amongst community hospitals in 12 states. The covariates used were patient demographics (age, gender, socioeconomic, and race/ethnicity), insurance type, number of prior year hospital stays, and diagnoses. The primary data source was from the HCUP, along with data analyzed from the State Inpatient Databases, and the SEDD. According to Smith et al., they were attempting to establish the collinearity between the individual pair of regressors. The conclusion of this study showed that a high rate of hospital readmissions and emergency department revisits were more likely to occur when certain diagnosed conditions existed, such as alcohol or drug

dependence, dementia, psychotic disorders, autism, impulse control disorders, and personality disorders. Smith et al. stated that limitations could present with future studies and the evaluation of the collinearity between the individual pair of regressors. This was the only prior study found that tested behavioral disorders as predictors of emergency department revisits but the variables for behavior disorders were many.

Sangil et al. (2017) established the multiple risk factors associated with patients returning early to the emergency department and inpatient admissions. Sangil et al. used the Optum Labs Data Warehouse database that used patient discharge data. This study used covariates of age, sex, the number of chronic conditions using Hwang index (0,1,2,3,4,5+), race/ethnicity, non-mental health-related emergency department use, and primary mental health and substance abuse diagnoses (MHSA). This study also analyzed more than 350,000 emergency department patients treated for mental health diagnosis. Sangil et al. (2017) stated that data analyzed for the study did not capture mental health diagnosis related to demographic disparities. The study concluded that one of the risk factors that contributed toward patients with mental health diagnoses were due to the lack of inpatient psychiatric bed capacity.

The study conducted by Capp et al. (2016) evaluated adults with mental health disorder comorbidities that frequently presented to the emergency department and does the population differed based on insurance type. Capp et al. stated that the study consisted of evaluating primary and secondary insurance payers by isolating age groups from 18 to 64 years. Capp et al. (2016) used secondary data from the U.S. Census Bureau's Current Population Survey to ascertain statistical significance between payer types. The findings of the study showed that Medicaid and Medicare covered patients with mental health

disorders were significantly higher (Capp et al., 2016). Capp et al. mentioned that the limitation to this study was the inability of ascertaining if those patients with mental health comorbidities contributed to increased visits compared with patients without mental health comorbidities.

Sirotich, Durbin, and Durbin (2016) established the prevalence of repeated emergency department use for mental health reason among those individuals enrolled in an intensive care management program and experiencing sociodemographic, diagnostic, and service needs. Sirotich et al. conducted a cross-sectional study with 2611 patients with predictor variables and need variables. The analysis was performed to obtain the descriptive and univariate logistic regression. This study experienced limitations with the inability of separating the temporal and causal relationship in the absence of longitudinal data due to multiple emergency department visits (Sirotich et al., 2016).

Castner et al. (2015) examined the correlation between individuals with behavioral health diagnoses (psychiatric and substance abuse) to the frequent treat and release of emergency department use. Castner et al. used four cohorts that consisted of healthy, at risk, chronic, and system failure. The dependent variables used in this study were low, moderate, or frequent emergency department use. The independent variables used were psychiatric diagnoses, substance abuse, smoking, age, gender, and number of non-emergency department outpatient visits. Castner et al. used covariates of gender and age for this study. The authors determined that Medicaid patients with psychiatric diagnosis and had a substance abuse disorder were at higher risk of having frequent treat and release use of the emergency department (Castner et al., 2015). Castner et al. stated the study showed

limitations with the claim records being retrospective, patients with only one claim, and it did not represent individuals with no interactions with a healthcare system.

Contributing Factor Leading to Use of the Emergency Department

Gender

Beaudoin et al. (2015) evaluated the difference between sexes substance use among adult emergency department patients. The researchers used the data obtained through the screening, brief interventions, and the referral to treatment (SBIRT) database to evaluate the severity of need among the sexes (Beaudoin et al., 2015). The study duration was 30 months among a random sample of patients 18 to 64 years old and performed a multivariable logistic regression. Women reported a daily, to near daily, higher use of cocaine than men (Beaudoin et al., 2015). Beaudoin et al. (2015) noted that men exhibit higher substance abuse than women. The study did not investigate the risk factors or motivators for the substance use between the sexes (Beaudoin et al., 2015).

Hyeon-Ju Ryoo and Choo (2016) attempted to establish the connection between genders, opioids use, and emergency department use. Hyeon-Ju Ryoon and Choo used the Drug Abuse Warning Network (DAWN) to perform the logistic regression model between gender and opioid use. Hyeon-Ju Ryoon and Choo concluded that men had significantly higher emergency department visits due to illicit drug use than women. Hyeon-Ju Ryoon and Choo stated that DAWN had inherent limitations due to the data captured not being able to do an in-depth inquiry regarding severity of illnesses, patient level factors such as past drug abuse, socioeconomic status, physical or mental health comorbidities, and failed to provide detox referrals.

Canton et al. (2014) attempted to establish the correlation between genders with psychotic disorder with concurrent substance use and treatment in the emergency department. Canton et al. evaluated the primary psychosis and substance-induce psychosis for both male and female. Canton et al. concluded that women showed higher later age admission for treatment for primary psychosis and men showed higher substance-induced psychosis with lower admission for treatment. The researchers drew subjects from an upper Manhattan emergency department serving low-income areas and comorbidities found in the study sample limited the ability to generalize their findings, thus causing limitations in the study (Canton et al., 2014).

Homelessness

The study conducted by Svoboda and Ramsay (2015) examined frequency and mental health factors associated with presenting to the emergency department among low-income and homeless men. Svoboda and Ramsay (2015) used three cohorts of men who exhibited symptoms such as homelessness, alcoholism, and low income. The study concluded that homeless men who presented to the emergency department unconscious due to alcohol use and measurement of Glascow Coma Scale (GCS) (Svoboda & Ramsay, 2015). Men who lived in low-income housing and the general homeless population presented themselves more frequently to the emergency department due to substance use as well as alcoholism (Svoboda & Ramsay, 2015). Svoboda and Ramsay (2015) stated that the study showed limitations due to undercount of reduced GCS levels due to recording bias that skewed homeless count data.

Doran et al. (2018) examined substance use among the homeless population who used the emergency department. Doran et al. performed a bivariate analysis and a multivariable analysis was conducted by using logistic regression. Total of 2,396 homeless and nonhomeless patients from an urban public hospital emergency department participated in the study (Doran et al., 2018). Doran et al. experienced limitations with the inability to conclude causality or temporality of the observed relationships in the study. Doran et al. concluded in the study prevalence with alcohol and substance abuse among homeless patients. Relevant relationship between homelessness and substance use was prevalent for emergency department patients (Doran et al., 2018).

Lam, Arora, and Menchine (2016) established the effects of homeless patients who revisit the emergency department through a timeframe of 30 days. Lam et al. were also looking to assess the readmissions among patients that have mental health conditions. Secondary data was used via administrative data from an adult emergency department in an urban safety-net hospital. They performed multivariate logistic regressions to evaluate whether homelessness caused mental health patients to have revisits and hospital readmissions within a 30-day revisiting timeframe. Lam et al. used controlling variables of the patient's age, sex, race/ethnicity, type of insurance, level of acuity, and emergency department disposition. The authors concluded that homeless patients increased the 30-day readmission to the emergency department revisits and readmissions. Lam et al. further stated that to reduce readmission and visits they would have to provide housing through care management. Lam et al. explained that the limitations in the data were due to Caucasian patients being excluded from the urban safety-net hospital data.

Moulin et al. (2018) examined whether homelessness, substance abuse, mental illness, and insurance coverage contributed toward high emergency department use. The Moulin et al. (2018) study consisted of a cohort defined at patient level data from the emergency department visits reported to California's Office of Statewide Health Planning and Development (OSHPD). The data analyzed was conducted by using multivariate log-linear model with Poisson distribution with a confidence interval of 95% (Moulin et al., 2018). Moulin et al. concluded that substance use disorder is prevalent among homelessness and patients with public healthcare coverage that frequented the emergency department more for mental illness. Due to the study being dependent on diagnosis codes assigned by the emergency department providers they were subjected to misclassification bias this caused a major limitation in the study (Moulin et al., 2018).

Huyhn et al. (2016) evaluated the characteristics of individuals with substance use disorders (ISUDs) and frequency of emergency department use. Huyhn et al. determined the predisposing, enabling, and need factors by using a negative binomial regression model. Huyhn et al. conducted the study by using an addiction rehabilitation center (ARC) database. Huyhn et al. performed a statistical analysis using χ^2 tests for categorical variables and ANOVA tests for continuous variables. The results of the studies test showed increased number of emergency department visit was associated with the following variables: older age, social fragmentation, alcohol abuse, drug abuse, schizophrenia, anxiety disorders, personality disorders, and chronic physical disorders (Huynh et al., 2016). Huynh et al. reported limitations in the substance use disorders not being detected during medical appointments and hospitalization that caused an inaccurate number of patients identified with substance use disorders in the study.

Cheung et al. (2015) examined the correlation between emergency department use, hospital admission, and substance dependence among homeless individuals with mental illness. Cheung et al. conducted a statistical analysis by using 500 participants in a descriptive statistical sampling by using categorical variables and obtaining the one-way ANOVA from the continuous variable. Cheung et al. performed negative binomial regression analysis to estimate the association between each outcome variable and the primary independent variable. Cheung et al. study concluded no association between substance dependence being independently associated with emergency department use or hospital admission among the homeless adults with mental disorders. Cheung et al. reported the limitation of having a housing facility near the hospital influenced the frequency of emergency department visits by those homeless patients causing the numbers to be skewed.

Age

Boudreaux et al. (2016) measured the success of having outreach visits from local mental health providers' form the community to psychiatric patients in an emergency department. Boudreaux et al. measured the success of the outreach team through the decrease of emergency room use from patients with the behavioral health crisis. Research performed a statistical analysis by using categorical data and using a one-way analysis of variances. From the data, Boudreaux et al. (2016) uncovered that patients contacted through their outreach visits were more likely to attend their first appointment. The research did have limitations such as the lack of random assignment that caused the data to be incomplete (Boudreaux et al., 2016).

Bos et al. (2014) evaluated the patients' characteristics in a real-life setting and to see how effective the treatments received were. The researchers wanted to establish whether routine outcome monitoring (ROM) was a suitable method for providing effective treatment. The sample size used was 376 outpatient clinic patients. The outcome of the study showed that patients were satisfied with their treatments. However, the younger patients withdrew from the review, which caused a higher rate of dropout. According to Bos et al. (2014), the mixed model analysis showed significant improvement in symptomatology, quality of life, and autonomy, and differential improvement for different subgroups. The limitation of this study showed that ROM was not sufficient for providing the necessary data outcome (Bos et al., 2014).

Choi et al. (2015) examined the effect of mental health and substance use disorder on older adults that presented to the emergency department. Choi et al. used secondary data from the 2012 National Emergency department that reviewed visits by patients 65 years and older. To establish relationships between mental health, substance use disorder, and suicide attempts, a binary logistic regression was completed (Choi et al., 2015). Choi et al. performed a multinomial logistic regression test to establish the relationship between mental health, substance use disorder and the emergency department use. Choi et al. concluded that a correlation existed between late-life mental health and substance use disorders that increased the risk factors that brought older adults to the emergency department. Choi et al. noted limitations in the data obtained on substance misuse were limited to diagnosis of alcohol and drug use disorders that were reportedly lower among older adults.

Soleimani et al. (2016) attempted to ascertain the physician based care factors associated with adolescent emergency department revisits and inpatient hospitalization following an emergency department visit. Soleimani et al. performed the study in a cohort of 208 adolescent patients. Soleimani et al. concluded that adolescents received prior pediatric follow up were less likely to revisit the emergency department than those adolescents who did not obtain pediatric follow up. The adolescents who did not previously acquire the necessary pediatric follow up revisited the emergency department and experienced a higher percentage of mental health inpatient stays (Soleimani et al., 2016). Soleimani et al. reported that the limitation to the study resulted in a large confidence interval in several findings caused the reported results to be difficult to interpret due to models being heavily censored.

Hakenewerth et al. (2015) analyzed emergency department visits by patients with mental health disorders in North Carolina to determine frequency and characteristics of the emergency department visits by older adults. Hakenewerth et al. (2015) statistical results revealed that the older population that presented to the emergency department in North Carolina was diagnosed with mental health disorders such as anxiety/depression disorders and schizophrenia/delusional disorders. Hakenewerth et al. (2015) concluded in the study that the older adults in North Carolina with mental health disorder accounted for more than one-quarter of the emergency department patients. Hakenewerth et al. (2015) further stated in this study that older adults would continue to increase due to the "baby boomer" population. The limitation of the study reported that not all emergency department visits were primarily for mental health issues that may have caused the data to be inaccurate (Hakenewerth et al., 2015).

Race and Ethnicity

Soril et al.'s (2015) empirical findings were based on the societal mental health influence on the United States. Soril et al. stated that mental health problems imposed substantial emotional, social, and economic burdens on those who are experienced them due to upstream social and chronic health issues. Soril et al. further stated that people with high levels of mental distress were at a disadvantage due to the care not being available at the time they need it, or the accessibility of care. Some of the groups that experienced inadequate accesses to care, were those that did not have primary care access in the minority community. Soril et al. stated that people in a minority groups faced increased issues such as other illnesses, and other socioeconomic barriers. The study showed limitations in the ability to acquire data on definitive comorbidities contributing toward mental health problems (Soril et al., 2015).

Lee et al. (2017) established the multiple risk factors associated with patients who returned early to the emergency department and inpatient admissions. Lee et al. used the Optum Labs Data Warehouse database to use the patient discharge data. The researchers used covariates of age, sex, the number of chronic conditions using Hwang index (0,1,2,3,4,5+), race/ethnicity, non-mental health-related emergency department use, and primary mental health and substance abuse diagnoses. The authors' analyzed more than 350,000 emergency department patients treated for mental health diagnosis. The authors concluded that one of the risk factors that contributed toward patients with mental health diagnoses was due to the lack of inpatient psychiatric bed capacity.

Marrast et al. (2016) evaluated racial and ethnic disparities in mental health care among children and young adults. Marrast et al. used data from the 2006-2012 Medical Expenditure Panel Survey (MEPS) with restricted analysis to children younger than 18 years and young adults aged 18 to 34 years. Marrast et al. found that Black and Latino children and young adults received markedly less outpatient mental health, emergency department, and substance abuse care than their nonminority counterparts. Marrast et al. also concluded that psychiatric and behavioral problems among minority youths often resulted in school punishment or incarceration, rarely any mental health care through emergency department use. Marrast et al. reported limitations in data obtained due to cultural reluctance related to social stigma or health care system mistrust that caused minorities to seek mental health treatment causing data to be skewed.

Insurance

Vandyk et al. (2017) evaluated the experiences of people who frequently presented to the emergency department for mental health-related reasons. As stated by Vandyk et al. due to limited financial and human resources the burden falls unnecessarily on the emergency department to provide care for those who had limited access to care with behavioral disorders. The two questions that the authors explored were (a) How do frequent presenters describe and explain their need for emergency department care?, and (b) How do numerous presenters to the emergency department describe their interactions with health care providers? The findings of this study showed that patients with poor

mental health believed that all emergency department visits were necessary. Vandyk et al. mentioned that the study limitation were patients that presented themselves with mental health conditions did not have a true mental health condition.

The study performed by Schildhaus et al. (2013) investigated whether health conditions and insurance status were significant predictors of admission to a community hospital directly from an emergency department visit with a substance use disorder. Schildhaus et al. used secondary data from the Nationwide Emergency department Sample database (NEDS) in order to conduct the study. Schildhaus et al. population for the study consisted of patients 18-64 years of age and patients with principal and secondary substance use disorder diagnosis recorded. Schildhaus et al. the logistic regression indicated that uninsured patients with substance abuse disorder diagnosis were in greater need of inpatient care than others that required minimal care. Schildhaus et al. concluded that patients with substance use disorder were 17.7% more than reported. Schildhaus et al. reported the limitation of the study based on the possibility that the physicians would incorrectly diagnose a condition or fail to diagnose that caused inaccuracy to the data.

The study performed by Mitchell et al. (2017) examined the relationship between frequent emergency department use and use of non-emergency department health care services among those that experienced homelessness. Mitchell et al. utilized data from encounter data from MassHealth and electronic medical record data from Boston Health Care for the Homeless Program (BHCHP). Mitchell et al. performed the statistical analysis on 6,388 patients by measuring interest of emergency department visits and cost of non-emergency department services received. Mitchel et al. concluded in the study that homeless patients that exhibited increased mental health, substance use disorders, and

physical health conditions were associated with increased costs and higher level of emergency department use than non-emergency department cost. The available data in the study were limited due to not providing information on the duration or patterns of homelessness experienced by the cohort (Mitchell et al., 2017).

The study conducted by Golberstein et al. (2015) examined the relationship between young adults hospital based care for psychiatric diagnosis and insurance expansion. Golberstein et al. utilized data sets from three different sources: California's State Inpatient Database (SID), 2005 through 2011 in California's State Emergency department Databases (SEDD), and 2005-2011 data from the National Inpatient Samples (NIS) to conduct the study's analysis. Golberstein et al. conducted a linear regression model on the data obtained and the findings noted that due to the coverage expansion resulted in 45% fewer psychiatric emergency department in California. Golberstein et al. also concluded that emergency department visits by uninsured patients decreased significantly in California. The study limitation showed discharge data lacked clinical information to determine whether higher admission rates were related insurance efficacy (Golberstein et al., 2015).

The study performed by Shim et al. (2013) examined the use of emergency department services by Medicaid beneficiaries with comorbid diabetes and schizophrenia, with particularly high levels of clinical complexity. Shim et al. extracted secondary data from 2006 to 2007 Medicaid Analytic Extract (MAX) dataset obtained through the Center for Medicare and Medicaid Services (CMS). Shim el al. categorized the patients into four cohort groups. Shim et al. conducted a multivariate logistic regression model to estimate the three emergency department outcomes, controlling for four disease conditions. Shim et al.

findings from the study conducted were that comorbid diabetes and schizophrenia resulted in higher levels of emergency department visits compared to individuals with diabetes only or schizophrenia only. Shim et al. noted the limitation of this study were due to Medicaid claims not being completed during the emergency department visit causing for inaccurate coding of claims.

Rural/Urban Areas

The study performed by Van Doren et al. (2016) attempted to appraise the level of emergency department misuse by patients with mental health or substance diagnoses across urban counties in North Carolina. The data that was utilized to complete this study was data from the 2010 North Carolina State Emergency department and Inpatient Database. According to Van Doren et al. the study utilized the descriptive statistics as their method for analytics to perform the chi-square tests, t-tests, and variance test. The study concluded that the survey uncovered that in North Carolina mental health and substance abuse accounted for a small portion of the discharges. However, the expenditures mainly impact urban counties across North Carolina. Van Doren et al. stated that for the urban community to obtain the most substantial cost savings for patients benefited from having community-based mental health and substance abuse providers. Van Doren et al. important limitations in the 2010 state database not capturing Hispanic ethnicity, which limits the interpretation of the results regarding racial and ethnic disparities.

The study performed by Davis et al. (2016) was to establish a relationship between the disparities of alcohol, drug use, and mental health condition to access to care in rural areas. Davis et al. obtained approval to conduct the study from the Institutional Review

Board at Oregon Health & Science University; the National Institute of Mental Health under the authority of the United States Department of Health and Human Services issued a Certificate of Confidentiality to protect the privacy of the research participants. Davis et al. performed a cross-sectional statewide health assessment with a combination of mail, telephone, and in person surveys administered. Davis et al. results showed that patients with alcohol, drug us, and mental health conditions in isolated regions were less likely to have access to primary care, but emergency department and inpatient admissions were high across the study population. Davis et al. study showed limitation in relying on self-reported data due to bias in reporting alcohol, drug use, and mental health conditions.

The study conducted by Schroeder & Leigh-Peterson (2018) examined rural and urban use of the emergency department for mental health and substance abuse. Schroeder & Leigh-Peterson obtained data for this study from the following: Healthcare Cost and Utilization Project (HCUP), State Inpatient Database (SID), and State Emergency Department Database (SEDD). The variables that Schroeder & Leigh-Peterson utilized for the study that included patient zip code, patient age, patient gender, patient race, payer type, diagnosis codes, and discharge status. Schroeder & Leigh-Peterson concluded by stating that rural residents did not have disproportional visits to the emergency department than urban areas. Schroeder & Leigh-Peterson further concluded that emergency departments treating rural residents were more likely to see mental health and substances abuse case in patients that were 65 and older. Schroeder & Leigh-Peterson study did not note any limitations showed in their study.

The study conducted by Goldstick et al. (2016) attempted to identify characteristics of substance misuse profiles among youth entering an urban emergency department,

evaluate the correlation to community levels and behavioral comorbidities. Goldstick et al. utilized data from screening survey administered to individuals aged 14-24 that presented to the emergency department at the Level-1 trauma center in Flint, Michigan. Goldstick et al. obtained approval from the Institutional Review Board at the University of Michigan and a certificate of confidentiality was obtained in order to conduct the study. Goldstick et al. conducted a multinomial logistic regression compared substance use classes. Goldstick et al. concluded in the study that substance-misusing youth in urban communities were more likely to seek care in the emergency department and have higher risk for other behavior disorders. Limitations to this study were due to high levels of demographic segregation in Flint, MI that made it difficult to identify significant links to confounding variables (Goldstick et al., 2016).

Definitions of Terms

Behavior Disorder: According to U.S. Department of Health and Human Services, behavior disorders involve a pattern of disruptive behaviors such as impulsivity, defiant behavior, drug use, and criminal activity.

Mental Health Disease: According to American Psychiatric Association, mental illnesses are health conditions that are caused by changes in emotions, thinking process, and behavior changes.

Psychosis: According to the National Institute of Mental Health, psychosis is disorders that affect the mind that causes psychotic episodes such as depression, anxiety, social withdrawal, hallucinations, and delusions.

Substance Abuse: According to the World Health Organization (WHO), substance abuse is a perilous use of alcohol and illicit drugs that can lead continuous harmful use.

Literature Summary

Throughout the literature review many articles had similar findings with substance abuse disorder, behavioral comorbidities, and inaccurate mental health diagnosis. The literature stated that the socio-economical status, race/ethnicity, rural/urban communities were drivers for substance abuse disorders (Goldstick et al., 2016; Davis et al., 2016; Van Doren et al., 2016; Schildhaus et al., 2013). The psychosis disorders comorbidities that the literature review displayed were schizophrenia, bipolar disorder, anxiety, and depression (Capp et al., 2016; Shim et al., 2014; Sirotich et al., 2016). The literature study stated the lack of accurate mental health diagnosis by physicians in the emergency department and primary care physician office that led patients with substance abuse disorders to repeat emergency department visits (Mitchell et al., 2017; Soleimani et al., 2016).

Assumptions

There were assumptions made for this study, such as, missing data, which could occur on a random basis and could potentially hold no bias toward the study. Absence of prior medical history could also be assumed, if not previously presented in the emergency department. The absence of prior medial history will not hold bias to the study due to pattern of behavior not being a variable in the study. A mental health screening was performed on patients that display substance abuse or mental health condition in order to provide early treatment options. The screening results provide evidentiary classifications of behavior disorders. Considering these listed assumptions enhanced the studies validity.

Limitations

The following limitations of the study are hereby acknowledged, the study relied on secondary data analysis. Thus some variables contained in the dataset may not have an added value to the study. The data may contain information bias resulting from varying levels information accuracy due to the patient's different degrees of health literacy. Any data that could be missed may have impacted the assumptions drawn from this study and the researcher may not modify the dataset in order to ensure the exclusion of the missing data.

Scope and Delimitations

The dataset was obtained from the CDC through the National Hospital Ambulatory Medical Care Survey 2016 (NHAMCS). The delimitations of this study included a retrospective study from a survey data collected over a 5-year period. The dataset did not contain any control groups for comparison. The study was delimited to the variables presented in the dataset selected for this study.

Potential for Positive Change

Mental illnesses are common in the United States representing 18.3% of all U.S. adults experiencing mental illness (National Institute of Mental Health, 2017). Substance abuse was experienced in 50.5% of adults in the U.S. that have comorbidity of mental illness (NIMH, 2017). In the U.S. 26% of the homeless adults live in shelters have a serious mental illness, and 46% were living with severe mental illness and a substance use disorder (NIMH, 2017). Only 41% of adults that were experiencing serious mental illness receives treatment and 50.6% of children with mental health conditions were receiving treatment (NIHM,

2017). The financial impact for the United States for those with serious mental illness cost $193.2 billion in lost earnings per year (NIHM, 2017).

Due to mental illness and substance abuse being a marginally missed diagnosis, future patients would be benefit from the creation of a systematic approach for pre-screening. A primary care provider could do these screenings in order to provide a high standard of care. The screenings could significantly decrease the impact of mental illness and substance abuse on existing comorbidities, overall health, and the U.S. economy. Health care systems could find benefit from a reduction in expense savings by reducing over use in the emergency department caused by patients with mental illness and substance abuse.

The findings of this study could be used to reinforce current health care policies and the implementation of new metrics of decision making for treating patients with mental illness and substance abuse. The results from this study could further fill the knowledge gap currently identified through multiple factors of over use of repeated visits to emergency department for patients with behavior disorders, mental illnesses, and substance abuse disorders. This study listed several disparities noted by researchers. Homeless patients in urban communities that experience substance abuse disorders that have no insurance were less likely to seek care, than those patients that have Medicaid for health insurance (Doran et al., 2018).

The knowledge gained from this study could serve as a method to assist health care workers with the necessary information for engaging potential patients that have had substance abuse disorders and mental health disorders. The findings should serve as a means for developing new policies for treating patients with other means besides the

emergency department. The results could also serve as a basis toward future studies related to behavior disorders. In order to ensure that the use of repeated visits to the emergency department were decreased by using the findings results could encourage the community to develop better policies on handling those with behavior disorders in the community. Further use of the findings by community leaders may aid in creating other care options for those patients with behavior disorders besides presenting themselves in the emergency department.

Summary and Conclusion

Section 1 elaborated on patients with substance abuse and mental health disorders seeking out treatment in the emergency department. Furthermore, the problem statement, purpose of the study, theoretical framework, exhaustive literature reviews with a concentration on limitations, and assumptions of each study provided the necessary background support toward the study. Section 1 concluded with a description of the social change impact of the study.

Section 2 concentrated on research design and data collection of the study. In section 2, the methodology used was reviewed, targeted population was discussed, the modeled studies were described, and the treats and validity were explained.

Section 2: Research Design and Data Collection

Introduction

My purpose in this study was to examine whether a relationship exists between behavior disorders and the use of repeated visits to the emergency department. Behavior disorders that were included for the purposes of this study were substance abuse and psychotic disorders. The researchers focused on patients presented in the emergency department who had a behavior disorder diagnosis. The following covariates were evaluated for their effects on the relationship between substance abuse disorder and psychotic disorder to the use of repeated visits to the emergency department within 72 hours: age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban residence. In this section, I describe the variables associated with this study, covariates, the research design, research questions, hypotheses, sample size, data analysis structure, threats to the validity of the data, ethical consideration, and management of the data.

Modeled Studies

Prior retrospective studies have been performed that reviewed patients who exhibit substance abuse, psychotic disorders, anxiety, and depression who have repeated emergency department visits. These studies served as aids to model the study research design and data collection. Smith et al. (2014) completed a retrospective study consisting of 164,544 individuals from 12 states with alcohol and drug dependence, psychotic disorders, anxiety, and depression who had inpatient stays and then emergency department visits. This study was performed to examine and present data on the readmission rate as well as the return use of repeated visits to emergency department visits of specific individuals diagnosed with mental health and substance abuse disorders in the first 12 months of an

inpatient discharge (Smith et al., 2014). Findings of this study showed that individuals with substance abuse disorders or schizophrenia have a greater likelihood of readmission to the emergency department within the first 12 months of being discharged (Smith et al., 2014). New outpatient treatment models and improved hospital discharge planning processes have resulted in reduced readmissions and emergency department visits (Smith et al., 2014).

Research Design

The secondary dataset that obtained to complete the quantitative study was available to me from the Centers for Disease Control and Prevention (CDC). The National Hospital Ambulatory Medical Care Survey 2016 (NHAMCS) was designed to collect data on use and provision of ambulatory care services in hospital emergency and outpatient departments along with ambulatory surgery locations (CDC, 2018). Utilizing the SPSS software will complete the analysis of the secondary dataset.

Independent Variable

The independent variable that I used in this study was behavior disorder. The selection criteria for this study included patients who had a psychosis disorder diagnosis and/or substance abuse disorder.

Dependent Variable

The dependent variable that I used in this study was whether or not there are repeated visits to the emergency department within 72 hours of the first ED visit. Covariates for this study were from across the nation with a concentration on age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas.

The covariates were combined in groups based on the Anderson Behavior Model to measure them appropriately. I used a logistic regression analysis to evaluate the relationship between psychosis disorder and substance abuse orders to the use of the emergency department within 72 hours of first ED visit along with the previously listed covariates.

Each categorical variable was defined by using frequency. The following tests were completed in SPSS: crosstab test the relationship between the independent variables and the dependent variable. The χ^2 test was performed to test the hypothesis, and the multivariate test was executed to test the null hypothesis for the relationship between the independent variables and the dependent variable.

Methodology

The methodology for the study research design was included a description of the study population, setting and sampling techniques used for the survey, data analysis plan, power analysis completed to obtain the sample size, threats and validity, and a conclusion.

Population

The target population that I used in this study consisted of all patients presented in the emergency department with diagnosis of psychotic disorders and substance abuse. The patients consisted of patients across the nation that presented in the emergency department within 72 hours from first visit.

Setting and Sample

The sampling criteria included all patients seen in the emergency department and no one was omitted. The sample size was calculated by using G*Power.

The G*Power Statistical Power analysis software created by Heinrich-Heine-Universität Düsseldorf (Buchner, 2007) was obtained to accomplish the power. A logistic regression statistical test with a two-tailed *z* test was executed with the power analysis. The sample size yielded a minimum of 347 for the research study, with a two-tailed test of 1.95 a total odds ratio of 2.0, giving a null hypothesis Pr (Y=1|X=1) H_0 of .2, also giving a hypothesis α err probability equals .05, and 1- β err probability power of 80%. These results provided a high effect of patients with behavior disorders and use of the emergency department controlling for the covariates of age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas.

Power Analysis

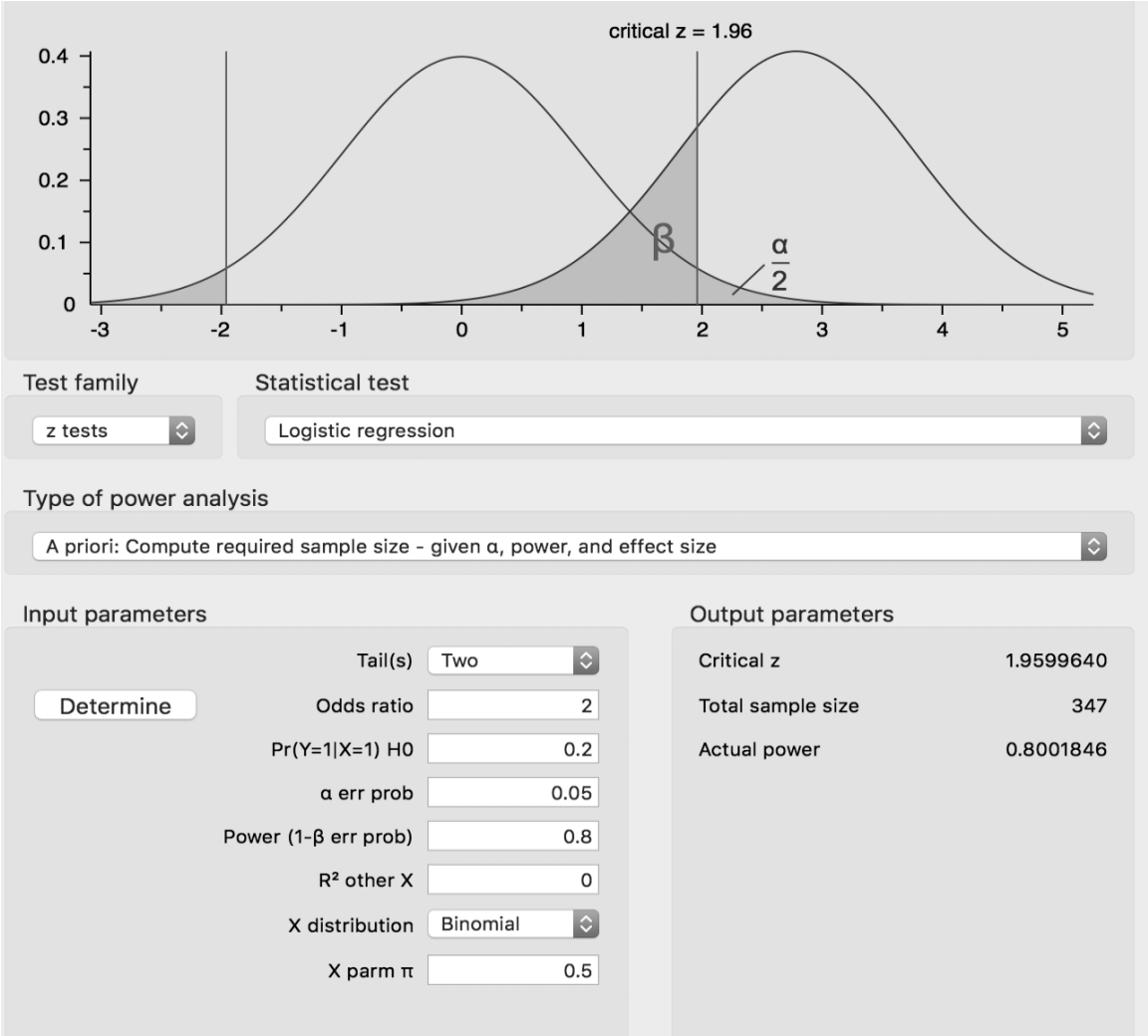

Figure 2. G*Power Statistical Power Analysis use. Adapted from Buchner (2007).

Data Analysis Plan

Data was assessed for duplication in patient visits within the same day, missing data that could negate the validity of data presented, and visits that were measured to be inconsistent toward the dependent variable. It was important to identify the patients that were presented more than once to emergency department for the same behavior disorder

diagnosis during the 1-year period of data collection. Performing a multiple logistic regression analysis in SPSS was applied to assess the probability of an association between the two independent variables of psychosis disorder and substance abuse disorder to the dependent variable of use of the emergency.

Data Handling

Data Transfer, Translation, Cleaning, Coding, and Recoding

Data transfer. After receiving the IRB approval on 4/19/19 (04-19-19-0744935) by the Office of Research Ethics and compliance at Walden University, I extracted the raw data set from the CDC 2016 NHAMCS data set. I then saved the raw data set on to my personal laptop, which is password protected. The 2016 NHAMCS archived data set initially included a total of 19,691 un-weighted patient records forms that were submitted by participating ambulatory clinics.

Data translation and cleaning. I created two random weighted sample sets from the total of 19,691 unweighted patient records by using SPSS. In each random weighted sample set excluded data that was incomplete or missing. The two random weighted samples were used to compare each dependent and independent variable in order to obtain a quantitative hypothesis.

Data coding and recoding.

Dependent variable coding and recoding. For the dependent variable of repeated visits to the emergency department within the last 72 hours was recoded from the original values of -9= “blank”, -8= “unknown”, -7= “not applicable”, 1= “yes”, and 2= “no”; to the recoded values of 1= “yes”, 2= “no and everything else”. The covariate for payer type was

recoded from the original values of -9= “all sources of payment are blank”, -8= “unknown”, 1= “private insurance”, 2= “Medicare”, 3= “Medicaid or CHIP or other state based program”, 4= “worker’s compensation”, 5= “self pay”, 6= “no charge/charity”, and 7= “other”; to the recoded values of 1= “Medicare”, 2= “Medicaid”, 3= “private insurance”, 4= “self pay”, and 5= “other”.

Independent variable coding and recoding. The independent variables of substance abuse and psychotic disorder needed recoding, due to the overwhelming number of diagnosis 1 from the 2016 NHAMCS dataset that had fallen within the behavior disorder of substance abuse and psychotic disorder. Each diagnosis had to be recoded in SPSS by creating dummy variables for both the substance and psychotic disorder. The total of diagnosis listed in the 2016 NHAMCS data set was 1252, 28 were classified as substance abuse, 57 were classified as psychotic disorders, and the remaining 1167 were classified none or 0.

Research Question(s) and Hypotheses

R1: Is there a relationship between being diagnosed with a psychotic disorder and repeated visits to the emergency department with 72 hours of first ED visit?

$H_0$1: There is no statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

H_a1: There is a statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

R2: Is there a relationship between being diagnosed with a substance abuse disorder and repeated visits to the emergency department with 72 hours of first ED visit?

$H_0$2: There is no statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

H_a2: There is a statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

Threats and Validity

Threats to External Validity

Every emergency department across the United States had different processes and workflow charts on capturing patient data and treatment, however, each emergency department processes the treatment of patients with behavior disorders in the same manner (Gill et al., 2016). Each emergency department have a physician, register nurses, patient technicians, psychiatric officer, social workers, and other mental health specialists that would utilize their clinical skills in order to assess a patient that were presented to the emergency department. Commonality found across emergency department in the United States were to provide the highest quality of care and providing patients with proper recourses upon their discharge.

Threats to Internal Validity

One threat to the internal validity was the extent to which the statistical assumptions of the test were met.

Threats to Constructs or Statistical Conclusion Validity

Potential of the threats to the construct or statistical conclusion validity in this study could be a bias found in specific selection and in potential patients that have higher behavior disorder acuity that do not share the same covariates listed in the study.

Summary

Section 2 included a detailed description of the variables, covariates, research design, research questions and hypothesis, sampling procedures, determinations of sample size, power analysis, data analysis plan, and report of threats to validity.

The results of this study were able to provide ongoing insight into patterns of patients with behavior disorders, related to decreasing their repeated use of the emergency department within in 72 hours by providing alternative options for treatment. Therefore, this research was designed to fill a knowledge gap by concentrating on the relationship between those patients with behavior disorders and repeated admissions to the emergency department (Smith et al., 2014).

The results of this study were focused on patients who presented to the emergency department with a behavior disorder psychosis within 72 hours from first emergency visit, because of their inability to acquire care through an outpatient facility. The following covariates were evaluated for their effect on the relationship between behavior disorders and use of the emergency department with 72 hours of first ED visit: age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban residence. In Section 3, data methodology, data analysis, and analysis findings were reviewed.

Section 3: Presentation of the Results and Findings

Introduction

My purpose in this study was to establish whether a relationship exists between behavior disorders and the use of repeated visits to the emergency department with 72 hours of first ED visit. The psychotic disorder and substance abuse disorder are the two behavior disorders that will analyzed in this study. This study was exceptional because in it, I addressed a knowledge gap between patients with behavior disorders and the use of repeated visits to the emergency department with 72 hours of first ED visit. The results from the data analysis yielded confounded results that could aid health care systems with the knowledge to provide better methods of care for patients with behavior disorders. In this section, I describe the data handling, descriptive statistics, data analysis, and summarization of the analysis results. I used the following hypotheses to guide this study:

$H_0$1: There is no statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

H_a1: There is a statistically significant relationship between psychotic disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

$H_0$2: There is no statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

H_a2: There is a statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department with 72 hours of first ED visit.

In Section 3, I include results of the statistical analysis of data that I used from the 2016 NHAMCS data set. Prior to the findings of this study being described related to the research questions, and the summary of the analysis from the secondary data.

Data Collection of Secondary Data

Timeframe and Discrepancies of the Data Set

The archival data from the CDC 2016 NHAMCS data set was attained for this study. The data selected for this study was from patients that had repeated visits to the emergency room within 72 hours from original visit, patients who were diagnosed with a psychotic disorder, and patients who were diagnosed with substance abuse disorder, controlling for age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas. The NHAMCS performed an annual survey that sampled a percentage of ED visits, freestanding hospital-based ambulatory surgical clinical centers, and outpatient departments across all 50 states including the District of Columbia. The NHAMCS survey excluded federal, military, and the Veterans Administration hospitals from participating in the survey.

The archived data set initially was comprised of 19,410 weighted patient records. A total of 281 unweighted/weighted patient records were not included due to incomplete or missing data. The G*Power analysis required a minimum sample size of 347 and a two-tailed test total of 1.95 (Power = 0.80, Alpha = 0.05, and Odds Ratio = 2.0). There were no discrepancies in the data noted for this study.

Baseline Characteristics, Population Representativeness

Table 1 through Table 10 present the descriptive statistics of weighted variables that used two random sample sets. The first random sample set totaled up to 9,699

surveyed participants, and the second random sample set totaled up to 9,711. The analysis for both included the dependent variable of repeated visits to the ED within the last 72 hours. The analysis also included the independent variables, such as psychotic disorders, substance abuse disorders, along with the covariates age, gender, race/ethnicity, insurance coverage, homelessness, and rural/urban areas. Table 1, Random Sample 1, shows that the majority of patients were aged 25 to 44 years (2,699, or 27.8%) and in Random Sample 2, the majority of the patients were aged 25 to 44 years (2656, or 27.4%). As noted in Table 2, in Random Sample 1, the highest gender was female (5301, or 54.7%) and for Random Sample 2, the highest gender was female (5266, or 54.2%). Table 3, listed both random samples the residence for the patient was that of private residence showing in Random Sample 1, (9086, or 93.7%) and in Random Sample 2, (9107, or 93.8%). In Table 3, Random Sample 1, private residence was (9086, or 93.7%) and in Random Sample 2, private residence was (9107, or 93.8%). As noted in table 4, Random Sample 1, (3503, or 36.1%) were Medicaid, and in Random Sample 2, a total of (3484, or 35.9%) were Medicaid. In Table 5, in Random Sample 1, (5705, or 58.8%) were Non-Hispanic White, and in Random Sample 2, a total of Non-Hispanic White participants were (5724, or 58.9%). In Table 6, according to Random Sample 1, (3303, or 34.1%) were located in the south of the United States and in the Random Sample 2, a total of (3289, or 33.9%) were located in the south of the United States as well. As noted in Table 7, most participants were located in the metropolitan area according to the Random Sample 1, (8294, or 85.5%) and in Random Sample 2, there were a total of (8325, or 85.7%). In Table 8, a total of patients with psychotic disorders in Random Sample 1, (254, or 2.6%) and in Random Sample 2, patients with psychotic disorders were (267, or 2.7%). In Table 9, in Random Sample 1, participants

with substance abuse were a total of (165, or 1.7%) and Random Sample 2, participants with substance abuse were (183, or 1.9%). As noted in table 10, a total of (287, or 3%) of survey participants were seen repeatedly in the ED within 72 hours in Random Sample 1 and in Random Sample 2, a total of survey participants were seen repeatedly in the ED within 72 hours for a total of (291, or 3%).

Descriptive Statistics

Table 1

Frequency Distribution of Age Demographic Variables for Random Samples 1 and 2 (N = 19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Age (*N = 19,410)*				
>15 years	1745	18.0	1799	18.5
15-24 years	1384	14.3	1399	14.4
25-44 years	2699	27.8	2656	27.4
45-64 years	2294	23.7	2343	24.1
65-74 years	747	7.7	721	7.4
75 years and older	830	8.8	793	8.2

Table 2

Frequency Distribution of Patient Sex Demographic Variables Among Study Subjects (N = 19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Gender (*N = 19,410)*				
Female (% of patients)	5301	54.7	5266	54.2
Male (% of patients)	4398	45.3	4445	45.8

Table 3

Frequency Distribution of Patient Residence Demographic Variables Among Study Subjects (N = 19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Patient residence (*N = 19,410)*				
Blank	82	.8	90	.9
Unknown	99	1.0	92	.9
Private residence	9086	93.7	9107	93.8
Nursing home	138	1.4	135	1.4
Homeless/homeless shelter	144	1.5	136	1.4
Other	150	1.5	151	1.6

Table 4

Frequency Distribution of Pay Type or Insurance Coverage Demographic Variables Among Study Subjects (N = 19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Insurance coverage (*N = 19,410)*				
Medicare	1812	18.7	1790	18.4
Medicaid	3503	36.1	3484	35.9
Private pay	2532	26.1	2602	26.8
Self-pay	827	8.5	821	8.5
Other	1025	10.6	1014	10.4

Table 5

Frequency Distribution of Race and Ethnicity Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Race and Ethnicity (*N=19,410)*				
Non-Hispanic White	5705	58.8	5724	58.9
Non-Hispanic Black	2090	21.5	2113	21.8
Hispanic	1481	15.3	1446	14.9
Non-Hispanic Other	423	4.4	428	4.4

Table 6

Frequency Distribution of Geographic Region Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Geographic Region (*N=19,410)*				
Northeast	1528	15.8	1497	15.4
Midwest	2244	23.1	2299	23.7
South	3303	34.1	3289	33.9
West	2624	27.1	2626	27.0

Table 7

Frequency Distribution of Metropolitan Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Metropolitan (*N=19,410)*				
MSA(Metropolitan Statistical Area)	8294	85.5	8325	85.7
Non-MSA	1405	14.5	1386	14.3

Table 8

Frequency Distribution of Psychotic Disorder Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Psychotic Disorder (*N=19,410)*				
No = .00	9445	97.4	9444	97.3
Yes = 1.00	254	2.6	267	2.7

Table 9

Frequency Distribution of Substance Abuse Disorder Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Substance Abuse Disorder (*N=19,410)*				
No = .00	9534	98.3	9528	98.1
Yes = 1.00	165	1.7	183	1.9

Table 10

Frequency Distribution of Seen in ED within 72 hours Demographic Variables Among Study Subjects (N=19,410)

	Random Sample 1		Random Sample 2	
Variable	Frequency	%	Frequency	%
Seen in ED within 72 hours (*N=19,410)*				
No = .00	9412	97.0	9420	97.0
Yes = 1.00	287	3.0	291	3.0

Study Results

This section included the statistical assumptions, research questions, results of the statistical analysis findings, answers to the research questions, hypotheses test results, and the conclusion of the summary results.

Statistical Assumptions

In order to establish a relationship between the two variables that were measured at an ordinal or nominal level in a study the cross tabulation with chi-square will be performed. For statistical significance and establishing (or lack thereof) a strong relationship the significance value of each measure should be less than or equal to .05 (Franfort-Nachmias & Leon-Guerrero, 2018). The assumptions for the multiple logistic regressions consist of a dependent variable that was measured on a dichotomous scale that contains one or more categorical variables, and the independent variable contains one or more continuous variable (Franfort-Nachmias & Leon-Guerrero, 2018). The analysis was performed with multiple logistic regressions that enabled the examination of the effects to the relationship between the two independent variables on a single dependent variable, while controlling the effects of one variable while analyzing the effect of the other variable (Franfort-Nachmias & Leon-Guerrero, 2018). After the statistical assumptions were conducted the cross-tabulation with chi-square were obtained, multiple regression analysis was completed along with the analysis of the dependent variable, repeated visits to the emergency department within 72 hours, and each independent variables of behavior disorders that are substance abuse and psychotic disorder.

Research Questions

R1- Is there a relationship between being diagnosed with a psychotic disorder and repeated visits to the emergency department with 72 hours of first ED visit?

R2- Is there a relationship between being diagnosed with a substance abuse disorder and repeated visits to the emergency department with 72 hours of first ED visit?

Results of Cross Tabulations

For both unweighted and weighted cross-tabulations were performed in SPSS. Only the unweighted cross-tabulation test for both random samples produced the Pearson chi-square test for the independence that was used to establish an association amongst the dependent and independent variables. Table 11(Random Sample 1) and Table 12 (Random Sample 2) represent the unweighted cross tabulations with the same dependent variables, independent variables, and covariates in both tables. The unweighted two-way cross tabulation table results shown in table 11 (Random Sample 1) and table 12 (Random Sample 2), included the Pearson chi-square output and the *p* value. The *p*-value and the Pearson chi-square output were applied in order to test the significant relationship between the two categorical variables. The research question hypotheses proposed that there was a relationship between both the dependent and independent variable. However, the Person chi-square output was testing the null hypothesis. The null hypothesis (H_0) illustrates that no relationship exists between two cross-tabulated variables (Franfort-Nachmia & Leon-Guerrero, 2018). Table 13 (Random Sample 1) and table 14 (Random Sample 2) displayed the weighted two-way cross tabulations output per SPSS, without p-value or significance value for either chart for the dependent variable of repeated ED visits within the last 72

hours, and the independent variables of psychotic disorder, substance abuse disorder, with covariates of age, patient residence, gender, ethnicity, geographic region, metropolitan region, metropolitan area, and pay type. The unweighted two-way provided a means for evaluating the statistical significance between the dependent variable of repeated visits to the emergency department with 72 hours of first ED visit and the independent variables of psychotic disorder and/or substance abuse. Therefore the unweighted variables were a one for one count of the each survey completed. The weighted variables provided a value for each observation in the data set based on the population of the data set. The weighted two-way results for both Table 13 and Table 14 reported how each independent variable in the data set population faired in comparison to whether or not they had repeated visits to the emergency department within 72 hours of the first ED visit with no statistical assumption being provided.

Based on the Pearson chi-square test results of evaluating the alpha or *p*-value ($p < .05$) in Table 11 (Random Sample 1) and Table 12 (Random Sample 2) showed the following independent variables were statistically significant to the dependent variable of repeated ED visits within the last 72 hours. In Table 11, the patient residence (*p*-value=.001) had a χ^2 of 40.280 that showed a strong effect between the independent variable of patients residence and the dependent repeated ED visits within the last 72 hours due to the *p*-value being below .05, thus rejecting the null hypothesis. In Table 12, the psychotic disorder calculated (*p*-value=.021) had a χ^2 of 8.423 that provided a strong effect due to the *p*-value being below .05 created a strong relationship with the independent variable of psychotic disorder and the dependent variable repeated ED visits within the last 72 hours, thus rejecting the null hypothesis. In Table 12, the substance abuse disorder (*p*-value=.023) had

a χ^2 of 4.650, that provided a strong effect between the independent variable of substance abuse disorder and the dependent variable of repeated ED visits within the last 72 hours, thus rejecting the null hypothesis. In Table 12, the geographic region (*p*-value=.032) had a χ^2 of 27.353, that created a strong effect between the independent variable of geographic region and the dependent variable of repeated ED visits within the last 72 hours, thus rejecting the null hypothesis. Therefore, in Table 11 patients residing in in private residences displayed 88.7% higher rate of readmissions to the ED. In Table 12, those patients that were diagnosed with psychotic disorder displayed 5.3% higher rate of readmissions to the ED than non-psychotic disorder population. In Table 12, patients that were diagnosed with substance abuse disorder showed a 2.1% higher rate of readmission to the ED than those with non-substance abuse disorder. In Table 12, patients that resided in the western geographic region of the United States showed a 31.1% higher rate of readmission than those residing in the northern, southern, and eastern geographic region.

In addition, the following independent variables were not statistically significant to the dependent variable of repeated ED visits within the last 72 hours and the chi-square provided had a weak effect, thus not rejecting the null hypothesis. In Table 11, the age (*p*-value=.096), gender (*p*-value=.161), ethnicity (*p*-value=.665), psychotic disorder (*p*-value=.061), substance abuse disorder (*p*-value=.419), geographic region (*p*-value=.145), metropolitan area (*p*-value=.465), pay type (*p*-value=.418); in Table 12 the age (*p*-value=.277), patient residence (*p*-value=.069), gender (*p*-value=.464), ethnicity (*p*-value=.829), metropolitan area (*p*-value=.977), and pay type (*p*-value=.136).

Table 11
Unweighted Two-Way Table Results- Repeated ED Visits within the last 72 Hours and Independent Variables- Random Sample 1

Variables	Repeated ED Visits within the last 72 Hours						
	Yes		No				
	N	(%)	*N*	(%)	Pearson Chi-Sq	*p-value*	Likelihood Ratio
Age							
Under 15 years	44	14.2	1701	18.6	16.543	.096	16.986
15-24 years	47	13.5	1337	14.4			
25-44 years	87	30.4	2612	27.0			
45-64 years	81	31.0	2213	23.3			
65-74 years	10	4.6	737	7.9			
75 years and over	18	6.4	812	8.7			
Patient Residence							
Blank	1	0.3	81	0.8	40.280	.001	23.419
Unknown	2	2.9	97	2.5			
Private residence	259	88.7	8827	92.6			
Nursing home	1	1.0	137	1.5			
Homeless/shelter	18	5.0	126	1.0			
Other	6	2.1	144	1.6			
Gender							
Female	133	49.2	5168	55.5	4.283	.161	4.257
Male	287	50.8	4244	44.5			

Ethnicity							
Non-Hispanic White	168	59.7	5537	59.9	2.777	.665	2.784
Non-Hispanic Black	62	24.1	2028	20.8			
Hispanic	47	13.5	1434	16.1			
Non-Hispanic Other	10	2.8	413	3.2			
Psychotic Disorder							
Non-Psychotic Disorder	272	95.4	9173	97.6	5.859	.061	4.686
Psychotic Disorder	15	4.6	239	2.4			

Substance Abuse Disorder							
Non-Substance Abuse	278	97.9	9256	98.5	.671	.419	.601
Substance Abuse	9	2.1	156	1.5			
Geographic Region							
Northeast	44	13.8	1484	16.9	14.981	.145	14.974
Midwest	72	26.9	2172	21.4			
South	74	28.2	3229	36.8			
West	97	31.1	2527	24.9			
Metropolitan Area							
Non-Metropolitan Area	36	17.4	1369	19.7	.928	.465	.956
Metropolitan Area	251	82.6	8043	80.3			
Pay Type							
Medicare	51	17.6	1761	18.1	7.240	.418	7.137
Medicaid	117	41.6	3386	34.2			
Private insurance	62	21.1	2470	25.2			
Self Pay	24	6.9	803	8.5			
Other	33	12.8	992	13.9			

Table 12
Unweighted Two-Way Table Results- Repeated ED Visits within the last 72 Hours and Independent Variables- Random Sample 2

Variables	Repeated ED Visits within the last 72 Hours						
	Yes		No				
	N	(%)	*N*	(%)	Pearson Chi-Sq	*p-value*	Likelihood Ratio
Age							
Under 15 years	49	17.8	1750	19.1	10.419	.277	11.725
15-24 years	48	16.2	1351	14.2			
25-44 years	91	30.3	2565	26.7			
45-64 years	73	26.4	2270	24.0			
65-74 years	13	3.9	708	7.7			
75 years and over	17	5.4	776	8.3			
Patient Residence							
Blank	3	1.5	87	0.8	15.208	.069	11.188
Unknown	2	2.9	90	2.2			
Private residence	263	88.2	8844	93.0			
Nursing home	5	2.8	130	1.4			
Homeless/shelter	13	2.7	123	0.9			
Other	5	2.0	146	1.6			
Gender							
Female	146	52.5	5120	54.6	.483	.464	.482
Male	287	50.8	4244	44.5			

Ethnicity							
Non-Hispanic White	169	58.9	5555	59.9	1.654	.829	1.616
Non-Hispanic Black	54	19.8	2059	20.9			
Hispanic	57	18.5	1389	15.8			
Non-Hispanic Other	11	2.8	417	3.4			
Psychotic Disorder							
Non-Psychotic Disorder	277	94.7	9167	97.5	8.423	.021	6.524
Psychotic Disorder	14	5.3	253	2.5			

Substance Abuse Disorder							
Non-Substance Abuse	281	96.7	9247	98.4	4.650	.023	3.638
Substance Abuse	10	3.3	173	1.6			
Geographic Region							
Northeast	45	17.6	1452	17.0	25.925	.032	27.353
Midwest	70	27.6	2229	21.8			
South	67	22.4	3222	36.8			
West	109	32.4	2517	24.4			
Metropolitan Area							
Non-Metropolitan Area	40	19.9	1346	19.8	.003	.977	.003
Metropolitan Area	251	80.1	8074	80.2			
Pay Type							
Medicare	42	13.4	1748	18.2	13.168	.136	12.962
Medicaid	128	44.0	3356	33.9			
Private insurance	68	21.3	2534	25.3			
Self Pay	25	8.4	796	8.4			
Other	28	12.9	986	14.1			

Table 13
Weighted Two-Way Table Results- Repeated ED Visits within the last 72 Hours and Independent Variables- Random Sample 1

Variables	Repeated ED Visits within the last 72 Hours			
	Yes		No	
	N *(in thousands)*	Percent (%)	*N* *(in thousands)*	Percent (%)
Age				
Under 15 years	357.7	2.6	13,424.3	97.4
15-24 years	325.1	3.1	10,027.9	96.9
25-44 years	607.2	3.1	18,774.2	96.9
45-64 years	528.5	3.0	16,879.8	97.0
65-74 years	79.1	1.4	5,429.9	98.6
75 years and over	108.1	2.8	5,867.1	98.2
Patient Residence				
Blank	29.0	4.7	591.3	95.3
Unknown	57.6	3.5	1,571.3	96.5
Private residence	1,768.7	2.6	65,480.1	97.4
Nursing home	56.0	5.4	989.0	94.6
Homeless/shelter	53.7	8.0	617.1	92.0
Other	40.6	3.4	1,154.4	96.6
Gender				
Female	1,053.0	2.7	38,463.7	97.3
Male	952.9	2.9	31,939.8	97.1

Ethnicity				
Non-Hispanic White	1,181.0	2.7	42,176.1	97.3
Non-Hispanic Black	397.9	2.6	14,709.2	97.4
Hispanic	371.4	3.2	11,146.3	96.8
Non-Hispanic Other	55.2	2.3	2,371.7	97.7
Psychotic Disorder				
Non-Psychotic Disorder	1,898.7	2.7	68,640.9	97.3
Psychotic Disorder	107.3	5.7	1,762.6	94.3
Substance Abuse Disorder				
Non-Substance Abuse	1,940.0	2.7	69,281.4	97.3
Substance Abuse	65.9	5.6	1,122.1	94.4
Geographic Region				
Northeast	352.8	2.9	11,982.2	97.1
Midwest	553.6	3.5	15,329.1	96.5
South	449.0	1.7	25,921.7	98.3
West	650.4	3.7	17,170.4	96.3
Metropolitan Area				
Non-Metropolitan Area	399.1	2.8	13,916.4	97.2
Metropolitan Area	1,606.8	2.8	56,487.0	97.2
Pay Type				
Medicare	267.9	2.1	12,798.3	97.9
Medicaid	883.3	3.6	23,890.3	96.4

Private insurance	426.6	2.3	17,838.4	97.7
Self Pay	169.0	2.8	5,920.4	97.2
Other	259.0	2.5	9,956.0	97.5

Table 14
Weighted Two-Way Table Results- Repeated ED Visits within the last 72 Hours and Independent Variables- Random Sample 2

Variables	Repeated ED Visits within the last 72 Hours			
	Yes		No	
	N *(in thousands)*	Percent (%)	*N* *(in thousands)*	Percent (%)
Age				
Under 15 years	357.7	2.6	13,424.3	97.4
15-24 years	325.1	3.1	10,027.9	96.9
25-44 years	607.2	3.1	18,774.2	96.9
45-64 years	528.5	3.0	16,879.8	97.0
65-74 years	79.1	1.4	542.9	98.6
75 years and over	108.1	2.8	5,867.1	98.2
Patient Residence				
Blank	29.0	4.7	591.3	95.3
Unknown	57.6	3.5	1,571.3	96.5
Private residence	1,768.7	2.6	65,480.1	97.4
Nursing home	56.0	5.4	989.0	94.6
Homeless/shelter	53.7	8.0	617.1	92.0
Other	40.6	3.4	1,154.4	96.6
Gender				
Female	1,053.0	2.7	38,463.7	97.3
Male	952.9	2.9	31,939.8	97.1

Ethnicity				
Non-Hispanic White	1,181.0	2.7	42,176.1	97.3
Non-Hispanic Black	397.9	2.6	14,709.2	97.4
Hispanic	371.4	3.2	11,146.3	96.8
Non-Hispanic Other	55.2	2.3	2,371.7	97.7
Psychotic Disorder				
Non-Psychotic Disorder	1,898.7	2.7	68,640.9	97.3
Psychotic Disorder	107.3	5.7	1,762.6	94.3
Substance Abuse Disorder				
Non-Substance Abuse	1,940.0	2.7	69,281.4	97.3
Substance Abuse	65.9	5.6	1,122.1	94.4
Geographic Region				
Northeast	352.8	2.9	11,982.2	97.1
Midwest	553.6	3.5	15,329.1	96.5
South	449.0	1.7	25,921.7	98.3
West	650.4	3.7	17,170.4	96.3
Metropolitan Area				
Non-Metropolitan Area	399.1	2.8	13,916.4	97.2
Metropolitan Area	1,606.8	2.8	56,487.0	97.2

Pay Type	267.9	2.1	12,798.3	97.9
Medicare	883.3	3.6	23,890.3	96.4
Medicaid	426.6	2.3	17,838.4	97.7
Private insurance	169.0	2.8	5,920.4	97.2
Self Pay	259.0	2.5	9,956.0	97.5
Other				

Results of Multiple Logistic Regression

The unweighted multiple logistic regression results were different than the weighted multiple logistic regression results. The unweighted multiple logistic regression results were performed with SPSS with a 95% confidence level for lower and upper measurements, beta for measurement of effect (larger the beta the stronger the effect), and the significance or *p*-value. Both unweighted multiple logistic regression results were illustrated in Table 15 (Random Sample 1) and Table 16 (Random Sample 2). In Table 15, the following independent variables showed statistical significance and beta effect (strong or weak); age 15-24 years vs. 75 years and older had a (*p*-value=.026) and a β of -.753 (weak), age 25-44 years vs. 75 years and older had a (*p*-value=.044) and a β of -.640 (weak), age 45-64 years vs. 75 years and older had a (*p*-value=.026) and a β of -.670 (weak), patient residence for homeless/homeless shelter vs. others had a (*p*-value=.032) and a β of -1.062 (weak), and patient sex had a (*p*-value=.012) and a β of .983 (strong). Table 16 for Random Sample 2, of the unweighted multiple logistic regression, had zero statistically significant independent variables. The weighted multiple logistic regression was performed with SPSS a 95% confidence level for lower and upper measurements. Each multiple logistic regression table was broken into two random sample sets illustrated in Table 17 (Random Sample 1) and Table 18 (random sample 2). According Table 17, none of the independent variables showed statistical significance in predicting repeated ED visits within the last 72 hours. Per Table 18, Random Sample 2, showed that age (*p*-value=.029) had statistical significance to repeated ED visits within the last 72 hours with an odds ratio of .488 for patients with an age of 45-64 years compared to those 75 years and older. The independent variables of Table 17, age (*p*-value=.096), patient residence (*p*-value=.313), gender (*p*-

value=.596), ethnicity (*p*-value=.909), psychotic disorder (*p*-value=.100), substance abuse disorder (*p*-value=.226), geographic region (*p*-value=.068), metropolitan area (*p*-value=.484), pay type (*p*-value=.456) were not statistically significant due *p*-value being above .05 threshold. The independent variables of Table 18, did not meet the statistical significant threshold of .05 were patient residence (*p*-value=.096), gender (*p*-value=.199), ethnicity (*p*-value=.435), psychotic disorder (*p*-value=.200), substance abuse disorder (*p*-value=.765), geographic region (*p*-value=.180), metropolitan area (*p*-value=.769), pay type (*p*-value=.330). Table 17, the odds ratios were valid but due to the p-value illustrated below the threshold of .05 the independent variables did not provide statistical significance in order to predict the repeated ED visits within the last 72 hours, thus the true odds are not different from 1.0. Consequently, the only odds ratio that was valid was that of the independent variable of age in Table 16 due to the *p*-value being less than the threshold of .05, and all the other independent variables in Table 18 had valid odds ratios but there *p*-value were not significant thus the odds were not dissimilar to 1.0.

Table 15

Significant Results of Unweighted Multiple Logistic Regression for Repeated ED Visits within the last 72 Hours –Random Sample 1

Independent Variables	Beta(β)	95% Confidence Interval		Sig. (*p*-value)
		Lower	Upper	
Age				
Under 15 years vs 75 years and over	-.447	.327	1.252	.192
15-24 years vs 75 years and over	-.753	.242	.914	.026
25-44 years vs 75 years and over	-.640	.283	.982	.044
45-64 years vs 75 years and over	-.670	.284	.924	.026
65-74 years vs 75 years and over	1.105	.753	3.608	.211
Patient Residence				
Blank vs Other	1.007	.321	23.324	.357
Unknown vs Other	.478	.316	8.243	.566
Private residence vs Other	.107	.482	2.574	.802
Nursing home vs Other	1.456	.502	36.626	.183
Homeless/Homeless shelter vs Other	-1.062	.131	.910	.032
Gender				
Patient Sex	.983	.578	.935	.012

Ethnicity				
Non-Hispanic White vs Non-Hispanic Other	-.337	.369	1.382	.714
Non-Hispanic Black vs Non-Hispanic Other	-.322	.359	1.460	.724
Hispanic vs Non-Hispanic Other	-.338	.354	1.436	.713
Psychotic Disorder				
Psychotic Disorder	-.439	.367	1.133	.127
Substance Abuse Disorder				
Substance Abuse Disorder	-.259	.378	1.579	.479
Geographic Region				
Northeast vs West	.240	.873	1.852	.240
Midwest vs West	.069	.768	1.496	.069
South vs West	.459	1.131	2.212	.459
Metropolitan Area				
Metropolitan Area	.020	.700	1.486	.917

Pay Type				
Medicare vs Other	-.304	.410	1.846	1.236
Medicaid vs Other	.065	.363	1.461	1.595
Private insurance vs Other	.319	.491	2.222	2.134
Self Pay vs Other	.169	.414	1.841	2.034

Table 16
Significant Results of Unweighted Multiple Logistic Regression for Repeated ED Visits within the last 72 Hours –Random Sample 2

Independent Variables	Beta(β)	95% Confidence Interval		Sig. (*p*-value)
		Lower	Upper	
Age				
Under 15 years vs 75 years and over	-.294	.369	1.504	.412
15-24 years vs 75 years and over	-.514	.297	1.203	.149
25-44 years vs 75 years and over	-.487	.318	1.189	.148
45-64 years vs 75 years and over	-.388	.359	1.282	.232
65-74 years vs 75 years and over	.156	.558	2.446	.679
Patient Residence				
Blank vs Other	-.148	.199	3.373	.863
Unknown vs Other	.294	.253	7.128	.342
Private residence vs Other	-.016	.396	2.443	.984
Nursing home vs Other	-.565	.156	2.070	.568
Homeless/Homeless shelter vs Other	-.898	.139	1.194	.407
Gender				
Patient Sex	-.149	.679	1.093	.219

Ethnicity				
Non-Hispanic White vs Non-Hispanic Other	-.354	.373	1.320	.702
Non-Hispanic Black vs Non-Hispanic Other	-.237	.400	1.556	.789
Hispanic vs Non-Hispanic Other	-.521	.306	1.152	.594
Psychotic Disorder				
Psychotic Disorder	-.375	.386	1.222	.201
Substance Abuse Disorder				
Substance Abuse Disorder	-.377	.349	1.348	.274
Geographic Region				
Northeast vs West	.350	.984	2.047	1.419
Midwest vs West	.261	.934	1.803	1.298
South vs West	.670	1.389	2.735	1.955
Metropolitan Area				
Metropolitan Area	-.162	.593	1.219	.377

Pay Type				
Medicare vs Other	-.017	.556	1.737	.983
Medicaid vs Other	-.150	.563	1.317	.490
Private insurance vs Other	.137	.727	1.809	.555
Self Pay vs Other	-.016	.566	1.712	.954

Table 17

Significant Results of Weighted Multiple Logistic Regression for Repeated ED Visits within the last 72 Hours –Random Sample 1

Independent Variables	Odds Ratio	95% Confidence Interval		*p*-value
		Lower	Upper	
Age				
Under 15 years vs 75 years and over	.570	.240	1.353	.096
15-24 years vs 75 years and over	.480	.239	.964	
25-44 years vs 75 years and over	.482	.242	.961	
45-64 years vs 75 years and over	.488	.228	1.042	
65-74 years vs 75 years and over	1.105	.427	2.857	
Patient Residence				
Blank vs Other	.600	.157	2.295	.313
Unknown vs Other	.871	.263	2.883	
Private residence vs Other	1.103	.386	3.153	
Nursing home vs Other	.333	.076	1.468	
Homeless/Homeless shelter vs Other	.570	.126	2.591	
Gender				
Patient Sex	.983	.740	1.190	.596

Ethnicity				
Non-Hispanic White vs Non-Hispanic Other	.659	.215	2.016	.909
Non-Hispanic Black vs Non-Hispanic Other	.652	.199	2.132	
Hispanic vs Non-Hispanic Other	.637	.180	2.255	
Psychotic Disorder				
Psychotic Disorder	.523	.241	1.135	.100
Substance Abuse Disorder				
Substance Abuse Disorder	.635	.303	3.582	.226
Geographic Region				
Northeast vs West	1.288	.732	2.264	.068
Midwest vs West	1.072	.589	1.949	
South vs West	2.173	1.193	3.096	
Metropolitan Area				
Metropolitan Area	1.065	.698	1.625	.484

Pay Type				
Medicare vs Other	.870	.410	1.846	.456
Medicaid vs Other	.728	.363	1.461	
Private insurance vs Other	1.045	.491	2.222	
Self Pay vs Other	.873	.414	1.841	

Table 18

Significant Results of Weighted Multiple Logistic Regression for Repeated ED Visits within the last 72 Hours –Random Sample 2

Independent Variables	Odds Ratio	95% Confidence Interval		*p*-value
		Lower	Upper	
Age				
Under 15 years vs 75 years and over	.839	.358	1.966	.029
15-24 years vs 75 years and over	.664	.318	1.386	
25-44 years vs 75 years and over	.542	.259	1.133	
45-64 years vs 75 years and over	.488	.252	.944	
65-74 years vs 75 years and over	1.244	.459	3.370	
Patient Residence				
Blank vs Other	2.350	.209	26.411	.096
Unknown vs Other	.872	.231	3.295	
Private residence vs Other	1.111	.360	3.432	
Nursing home vs Other	1.568	.166	14.830	
Homeless/Homeless shelter vs Other	.311	.078	1.232	
Gender				
Patient Sex	.786	.543	1.137	.199

Ethnicity				
Non-Hispanic White vs Non-Hispanic Other	.738	.240	2.271	.435
Non-Hispanic Black vs Non-Hispanic Other	.637	.193	2.101	
Hispanic vs Non-Hispanic Other	.931	.261	3.326	
Psychotic Disorder				
Psychotic Disorder	.597	.270	1.320	.200
Substance Abuse Disorder				
Substance Abuse Disorder	.635	.303	1.329	.765
Geographic Region				
Northeast vs West	1.288	.732	2.264	.180
Midwest vs West	1.072	.589	1.949	
South vs West	2.173	1.193	3.961	
Metropolitan Area				
Metropolitan Area	.840	.513	1.374	.769

Pay Type				
Medicare vs Other	.699	.297	1.645	.330
Medicaid vs Other	.773	.398	1.498	
Private insurance vs Other	1.098	.579	2.083	
Self Pay vs Other	1.181	.585	2.384	

Hypotheses Test Results

Research question 1. Research question one attempted to determine if there was a relationship between being diagnosed with a psychotic disorder and repeated ED visits within the last 72 hours. In Table 12, Random Sample 2 of the unweighted two way cross tabulation results, showed that there was a relationship between psychotic disorders and repeated ED visits within the last 72 hours. The psychotic disorder calculated (*p*-value=.021) had a χ^2 of 8.423 that provided a strong effect due to the *p*-value being below .05 created a strong relationship with the independent variable of psychotic disorder and the dependent variable repeated ED visits within the last 72 hours. The geographic region (*p*-value=.032) had a χ^2 of 27.353, which created a strong effect between the independent variable of geographic region and the dependent variable of repeated ED visits within the last 72 hours. In Table 11, Random Sample 1 of the unweighted two way cross tabulation results, the patient residence (*p*-value=.001) had a χ^2 of 40.280 that showed a strong effect between the independent variable of patients residence and the dependent repeated ED visits within the last 72 hours .Therefore, *p* was significant in the cross tabulation for psychotic disorders therefore the null hypothesis was not rejected. $H_0 1$: *There was a statistically significant relationship between psychotic disorder and diagnosis repeated visits to the emergency department within 72 hours*.

Research question 2. Research question two endeavored to determine if there was a relationship between being diagnosed with a substance abuse disorder and return visits to the emergency department. In Table 12, Random Sample 2 of the unweighted two way cross tabulation results, showed that there was a relationship between substance abuse disorders and repeated ED visits within the last 72 hours. The substance abuse disorder calculated (*p*-

value=.023) had a χ^2 of 4.650 that provided a strong effect due to the *p*-value being below .05 created a strong relationship with the independent variable of psychotic disorder and the dependent variable repeated ED visits within the last 72 hours. The geographic region (*p*-value=.032) had a χ^2 of 27.353, which created a strong effect between the independent variable of geographic region and the dependent variable of repeated ED visits within the last 72 hours. In Table 11, Random Sample 1 of the unweighted two way cross tabulation results, the patient residence (*p*-value=.001) had a χ^2 of 40.280 that showed a strong effect between the independent variable of patients residence and the dependent repeated ED visits within the last 72 hours. Hence, the *p* was significant in the cross tabulation for substance abuse disorder therefore the null hypothesis was not rejected. *H_o2*: *There was a statistically significant relationship between substance abuse disorder diagnosis and repeated visits to the emergency department within 72 hours*.

Answers to Research Questions

Research question one was found to have the conclusion that there was statistical relationship that exists between the diagnosis of psychotic disorder and repeated ED visits within the last 72 hours. Research question two was answered that there was a statistical relationship that exist between the diagnosis of substance abuse disorder and repeated ED visits within the last 72 hours. However, the weighted cross tabulations for both Random Sample 1 and Random Sample 2 could introduce bias to the study since the analysis would only capture a small fraction from the data set that would experience repeated ED visits within in the last 72 hours.

Summary

Section 3 represented the results and findings for my doctoral study. The results and findings illustrated two random sample sets incorporated the data collection of secondary data, descriptive statistics, cross tabulation with chi-square, and multiple logistic regression analysis of the research questions and hypotheses. The data examined to establish a relationship between psychotic disorder and substance abuse to the repeated ED visits within the last 72 hours were obtained from the 2016 NHAMCS that was collected by the CDC National center for Health Statistics.

Section 4 an analysis and explanation of the findings in the context of the Andersen Behavior model of health care use theoretical framework, limitations, comparison of findings to the peer-reviewed literature reviews, recommendations, and conclusion were discussed.

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

Introduction

My purpose in this quantitative study was to address the knowledge gap between patients with behavior disorders and the use of repeated visits to the emergency department within 72 hours of their first ED visit. The findings from both the cross-tabulation with χ^2 and the multiple logistic regression indicates significant statistical relationship between being diagnosed with psychotic disorders and/or substance abuse disorder to repeated ED visits within the last 72 hours. In contrast, the findings from the cross tabulation with χ^2 when examining each random sample individually did indicate some significant statistical relationship with independent variables from Random Sample 1 psychotic disorder, substance abuse disorder, and geographic region to repeated ED visits within the last 72 hours. Section 4 includes a thorough analysis of the findings, limitations experienced in the study, recommendations for future research, and implications toward health care practices and social change.

Interpretation of the Findings

A patient being diagnosed with psychotic disorder does have statistical significance and showed increase the odds of repeated ED visits within the last 72 hours. The analysis further established statistical significance with the covariates of the unweighted multiple logistic regression age 15-24 years vs. 75 years and older had a (*p*-value=.026) and a β of -.753 (weak), age 25-44 years vs. 75 years and older had a (*p*-value=.044) and a β of -.640 (weak), age 45-64 years vs. 75 years and older had a (*p*-value=.026) and a β of -.670 (weak), patient residence for homeless/homeless shelter vs. others had a (*p*-value=.032) and a β of -1.062 (weak), and patient sex had a (*p*-value=.012) and a β of .983 (strong). As previously

stated, in evaluating the random sample sets individually the independent variable yielded statistical significance.

A patient being diagnosed with substance abuse disorder displayed a statistical significance to increase the odd of repeated ED visits within the last 72 hours. In addition, the analyses established statistical significances

Findings to the Literature

My findings from the analyses demonstrated statistical significance between the relationship of a patient being diagnosed with psychotic disorder and repeated ED visits within the last 72 hours. However, in the Random Sample 2 of the unweighted cross tabulation provided that the psychotic disorder independent variable showed statistical significances while controlling for geographic region. My findings from the analyses indicated statistical significance between the relationship of a patient being diagnosed with substance abuse disorder and repeated ED visits within the last 72 hours. However, upon evaluating Random Sample 2 of the unweighted cross tabulation provided that the independent variable of substance abuse disorder noted to have statistical significance. In the following subsections of Section 4, I will present findings illustrated by the independent variables that were not statistically significant to the relationship of repeated ED visits within the last 72 hours, thus expanding on the knowledge gap.

Patients diagnosed with psychotic disorders. A study by Gill et al. (2016) determined that the study had limitation in the integrity of the data collected due to patients not disclosing all of their demographic information that caused the study to show no association between patients with mental illness and repeated visits to the ED. According

Cheung et al. (2015) study concluded no association between substance dependence being independently associated with emergency department use or hospital admission among the homeless adults with mental disorders. My study concluded that patients diagnosed with psychotic disorders who had repeated ED visits with in the last 72 hours had statistical significance that would increase or lower the odds of repeated ED. Those findings did not align with the study performed by both Cheung et al. (2015) and Gill et al. (2016) that there is no relationship between patients being diagnosed with psychotic disorders and repeated ED visits within the last 72 hours. There were no previous studies regarding the relationship between psychotic disorder and repeated ED visits within the last 72 hours.

Patients diagnosed with substance abuse disorders. According to Van Doren et al. (2016) study concluded that the survey uncovered that in North Carolina mental health and substance abuse accounted for a small portion of the discharges and did not show a relationship between discharge and repeated ED visits within the last 72 hours. My study concluded that a patient diagnosed with substance abuse disorder who had repeated ED visits with in the last 72 hours had statistical significances that would increase or lower the odds of repeated ED visits. Those findings did not align with the study performed by Van Doren et al. (2016). This study was only secluded to one state compared to my study that was nation wide.

Findings to Theory

Researchers had not fully investigated the relationship between psychotic disorders and/or substance abuse disorder and repeated ED visits within the last 72 hours. Researchers explored psychotic disorders and overcrowding of the ED, substance abuse disorder and the homeless population related to treatment, and behavior disorders in

adolescents related to treatment options. The Andersen Behavior Model of health care use theoretical framework was founded on the premise that there exist patterns of usage exist dependent upon such factors as illness levels, age or sex composition, presence or absence of health facilities, and income. The Andersen Behavioral Model further states that there were three determinants of health care use, predisposing, enabling factors, and perceived need factor (Andersen, 1995). Based on this framework and patients being diagnosed with psychotic disorder and/or substance abuse and repeated ED visits within the last 72 hours. I consider the Andersen Behavior Model of health care use to be a applicable theoretical framework for my study.

The analysis suggested that being diagnosed with psychotic disorder and/or substance abuse and repeated ED visits within 72 hours showed patterns of usage dependent on the covariates of age, race/ethnicity, insurance coverage, homelessness, and rural/urban residence in correlation of the three determinants of health care use; predisposing, enabling factors and perceived need factor.

Limitations of the Study

This study experienced limitations in the research data set that contributed toward the generality, rationality, and dependability of the findings. The data set that was utilized for this study was that of the 2016 NHAMCS, and the independent and dependent variables contained within the data set were identified and mentioned in the premise, prospectus, and proposal of the study. To acquire an estimated sample size I performed G*Power Statistical Power analysis, that required a sample size yield a minimum of 347 for the logistic regression analysis study, with a power=0.80, alpha=0.05, and odds ration=2. After the 2016 NHAMCS data set was downloaded the variables for psychotic disorder and

substance abuse disorder were arranged through performing dummy variables the sample size provided was 19,410. The sample size was then broken in two random samples not equal to each other consisting of random sample 1 set total 9,699 surveyed participants, and random sample 2 set totaled up to 9,711. The G*Power sample size was a weighted data set and actual numbers of the available sample size was not available until the 2016 NHAMCS data set was downloaded.

Recommendations

The study provided limitations were future researchers could improve on. To the extent of the research, in order to be able to be more antidotal with the findings having the states available in the survey would allow for a more target statistically adequate sample strength. Due to the survey being random and it also included other ambulatory areas caused for the overall statistical significance to be skewed by not being able to isolate the location of the survey. If the location could have been isolated to perhaps only Emergency departments then the sample size would have been stronger for a more strategic statistical significance between the relationships of psychotic disorder and/or substance abuse and repeated ED visits within the last 72 hours. Furthermore, the research could have limited the number of subsequent diagnosis on the survey since most patients were treated for their primary diagnosis not the latter. In eliminating the subsequent diagnosis could also have provided the research to be more statistically significant.

Implications Toward Health Care Practices and Social Change

This section provided implications toward health care practices and positive social change toward diagnosis of psychotic disorders and/or substance abuse disorders related to repeat ED visits within the last 72 hours. Presently, hospitals do not have enough staff or

resources in the emergency department to properly diagnosis and treat patients that suffer from psychotic disorders and/or substance abuse disorders. This deficiency was due to hospitals facing financial challenges related to personnel, specialized personnel, drugs, and equipment costs (Vandyk et al., 2017). As the financial burdens increase due to regulatory compliances it placed a strain on the ED to provide a holistic discharge plan to patients in order to prevent repeated ED visits within the last 72 hours.

Health Care Practices

Emergency department revisits occurred when certain diagnoses conditions exist such as alcohol or drug dependence, psychotic disorders (Smith et al., 2014), this increased the repeated ED visits within the last 72 hours for this patient population. Therefore, these revisits reduced hospital admissions and only created a bottleneck effect on the outpatient front-end through the ED and provided a treat and release methodology that lacked patient benefit. This type of medical management was a deficiency in a health care system.

The more repeated ED visits within the last 72 hours experienced by patients with psychotic disorders and/or substance abuse disorder could open a potential financial and patient care problem for a health system. The financial problem that this would cause would be increased unpaid co-pays, increased bad debt write-offs, and lower reimbursement based on the insurance type. This financial problem causes long term issues such as in order to reduce losses staff is cut, reduction of outside referrals provided, throughput shorten in order to reduce length of stay, and increase quantity while reducing quality. The revisit rate within 3-days or 72 hours was 8.2% with a 29% of the revisit involving an admission and 32% of revisits occurred at a different hospital from the index emergency department visit (Duseja et al., 2015). The patient care problems that will present itself from the increase of

repeated ED visits within the last 72 hours will be under diagnosing a patient, having near misses related to crisis events, not providing proper referrals either within the system and outside the system, and lack of serious diagnosis. Van Doren et al. (2016) stated for the urban community to obtain the most substantial cost savings for patients they would benefit from having community-based mental health and substance abuse providers.

Positive Social Change

In the United States mental illnesses are common and representing 18.3% of all U.S. adults experiencing mental illness (National Institute of Mental Health, 2017). Substance abuse is experienced in 50.5% of adults in the U.S. that have comorbidity of mental illness (NIMH, 2017). Providing early detection or treatment plans for patients that experience psychotic disorders and/or substance abuse will decrease the initial visit to the ED that in turn will reduce repeated ED visits within last 72 hours. The financial impact for the United States for those with serious mental illness cost $193.2 billion in lost earnings per year (NIHM, 2017). This is due to primarily to patients with behavior disorders not receiving proper treatment plans for future mental health management after initially presenting to the ED for care. By providing proper outpatient resources, follow up communications directly to the patients care manager, and treatment team will decrease the financial impact.

This studies findings and any other future finds could serve as a means of developing new policies for treating patients with other means besides the emergency department. In order to ensure that the use of repeated visits to the emergency department is decreased using the findings results would be to encourage the community leaders to develop better policies on handling those with behavior disorders in the community. The

community leaders could create other care options for those patients with behavior disorders besides presenting themselves in the emergency department such as behavior disorder urgent care facilities, behavior disorder travel clinic for those patients that are unable to leave there home, and updated education on how to recognize a behavior disorder and the treatment options.

Conclusion

I was able to identify a relationship between those patients with psychotic disorder and/or substances abuse disorder to the repeated ED visits within the last 72 hours. Due to the noted limitations of the study, I made mention of the recommended changes of the ability to include the state in the survey, the ability to isolate ambulatory locations, and removing subsequent diagnosis from the study since patients are primarily treated for the initial diagnosis that falls in line with reason for visit.

This study addressed the knowledge gap related to the relationship between those with psychotic disorder and/or substance abuse disorder to the repeated ED visits within the last 72 hours. The study concluded that there was a relationship between those with psychotic disorder and/or substance abuse disorder to the repeated ED visits within the last 72 hours from the 2016 NHAMCS data set. Hospital administrators could use this study as a national baseline to compare to their hospital or health care system performances that will enable them to provide a more robust treatment plan for the study patient population. Lastly, using the Andersen Behavior Model of health care use to evaluate the repeated ED visit use for patients with psychotic disorder and/or substance abuse while controlling for age, race/ethnicity, insurance coverage, homelessness, and rural/urban residence was best

suited for this study. However, it may not be a true indication of repeated ED visits within last 72 hours for patients with psychotic disorders and/or substance abuse disorder.

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