

2020

Outpatient Mental Health Service Utilization for Depression and Anxiety Post-Hurricane

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Walden University

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Walden University

College of Health Sciences

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Corey Darnell Taylor

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Walden University

2020

Abstract

Outpatient Mental Health Service Utilization for Depression and Anxiety Post-Hurricane

Katrina

by

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MA/MS, Air University, 2019

MPA, Troy University, 2012

BS, Southern University Agricultural and Mechanical College, 2007

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

Walden University

November 2020

Abstract

Increased depression and anxiety diagnoses are a result of the lack of use or underuse of outpatient mental health services, specifically among African Americans, youths, and the homeless, and this is a current issue in New Orleans, Louisiana post-Hurricane Katrina. Funding constraints due to the termination of the Louisiana Spirit Program contributed to deficits in terms of outpatient mental health facilities in New Orleans. The purpose of this quantitative study was to examine the association between the continuum and utilization of outpatient mental health services for African Americans, youth, and the homeless for those diagnosed with depression and anxiety. Andersen's behavioral model of healthcare use and Atkinson's sociocognitive theory were used to identify determinants of healthcare service use among people diagnosed with depression and anxiety. The quantitative study of 1043 cases, utilizing a correlational research design, analyzed data from the Data Center and the Hurricane Katrina Community Advisory Group using cross tabulations with chi-square and multiple logistic regression. The data analysis found statistically significant associations between outpatient mental health services and age and anxiety and race, specifically non-hispanic blacks. Associations were not found between anxiety and homelessness, age, and outpatient mental health services. Additionally, associations were not found between outpatient mental health services and, race and homelessness. The study contributes to positive social change by validating Andersen's behavioral model for health care use and Atkinson's socio-cognitive theory as a means for health care administrators to allocate funding for outpatient mental health facilities in New Orleans.

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Dedication

Throughout my life, I have encountered various challenges as a black man in today's society. Some of these challenges were because of the absence of my father during my young life due to his incarceration, and some were due to the desire and drive for me to be an anomaly and negate what some American's view me as because of the color of my skin. This study is dedicated to my first love, Mrs. Diedre Butler Davis, my mother. Mom, your sacrifices have truly paid off, and I am honored to be your son. We made it through Hurricane Katrina in 2005, and those memories of your strong will and determination during those trying times are the reason why I conducted this study. You made me who I am. I love you.

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I would like to thank God, my heavenly father, for keeping me grounded in his word. I would also like to thank Dr. Rabeh Hijazi, Dr. Kourtney Nieves, and Dr. Tami Lewis, who continued to motivate me through this process. Without your leadership and guidance, I would have crumbled. I cannot thank you enough for the support you gave me during this process. You are a part of this, and I am forever grateful. Thank you!

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Section 1: Foundation of the Study and Literature Review

Hurricane Katrina was a significant event for the residents of New Orleans, Louisiana, causing widespread population displacement and adverse impact on survivors' mental health. Hurricane Katrina was a devastating event for New Orleans that slammed into New Orleans on August 29, 2005 which affected adults and adolescents of different races and who were potentially homeless after the disaster. Mental health professionals scrambled to help survivors cope with destroyed neighborhoods, lost homes, and the disruption of family and other supportive relationships. The Louisiana legislature was not fully engaged with public health efforts to stabilize mental and substance abuse outpatient treatment services (Shuler, Suzuki, Podesta, Qualls-Hampton, & Wallington, 2017). In 2012, hospitals in New Orleans experienced a decrease of \$34 million in their operating budget, resulting in closures of outpatient treatment facilities. The result of budget cuts were closures of facilities, including removal of 10 of 20 emergency department psychiatric beds, firing of 23 emergency department psychiatric technicians and nursing assistants, and closure of 9 of the 38 inpatient psychiatric beds at Interim Louisiana State University Public Hospital's DePaul campus (Barrow, 2012; Maldonado, 2012).

The study was needed due to the significance and importance of allocating funds for implementation of outpatient mental health facilities to treat patients diagnosed with anxiety and depression. With a non-unified healthcare system of community mental health centers and drop-in clinics in New Orleans, it was difficult to receive medical care

(Maldonado, 2012). In 2010, the Orleans Parish Prison was the center for people to receive mental health treatment (Maldonado, 2012).

In this study, I sought to determine if the lack of outpatient mental health services as well as age, race, and homelessness predict anxiety and depression diagnoses. Through this study, health officials can better understand how certain demographic variables and lack of use of outpatient mental health services predict depression and anxiety diagnosis rates in New Orleans. The end result will be a positive social change by obtaining the funding needed for the implementation of outpatient mental health care facilities in the greater New Orleans area for those suffering with anxiety and depression. Access and use of outpatient mental health services would improve the overall population health for New Orleans by decreasing diagnosis rates for anxiety and depression. Positive social change is achieved by ensuring public health officials in New Orleans maximize efforts and prioritize funding for the implementation, maintenance, and sustainment of outpatient mental health facilities. Implementation and encouragement to use outpatient mental health facilities to treat depression and anxiety, specifically among the homeless, youth, and African Americans was the focus of the study.

This section includes the research problem, purpose of the study, research questions with associated hypotheses, and the theoretical foundation of the study. Additionally, it contains a thorough literature review section addressing all variables, definitions of terms used, assumptions, and significance. Lastly, it contains contributions of the study toward positive social change.

Problem Statement

The lack of outpatient mental health services is a problem in New Orleans, Louisiana due to increased numbers of depression and anxiety diagnoses and the termination of the Louisiana Spirit program, which is a federally funded program to assist affected personnel with behavioral health counseling to return to pre-disaster mental well-being (Jacob, 2015). Specifically, depression and anxiety among the homeless and those displaced from their homes as well as age variation are contributing factors in terms of adding more mental health service facilities and providers (McGuire et al., 2018). Hurricane Katrina caused pain and suffering to all members of the community, including the homeless. It also destroyed hospitals, clinics, and mental health facilities that served the poorest communities in the area (Dass-Brailsford & Thomley, 2015). This leads to a gap in the literature involving the continuum of outpatient mental health treatment for those diagnosed with depression and anxiety, specifically African Americans, youth, and the homeless based on natural disasters which present both acute and enduring stressors to affected individuals. As a result of Hurricane Katrina, the New Orleans Charitable Health Fund (NOCHF) aimed to increase access to care, improve population health, and create sustainable systems change; however, access and utilization of mental health services were minimal.

Exposure to natural disasters is a traumatic experience and has affects mental health by threatening satisfaction of life necessities such as thoughts of suicide or doing daily activities (Weems, Russell, Neill, Berman, & Scott, 2016). Currently, the residents of New Orleans continue to face hardships even several years after the storm. The state

and local government tried to rebuild the city's healthcare system and promote broader access to primary care, including mental health and community-based health services for all citizens. This information is relevant to healthcare administrators who work in the mental health sector by assisting public health officials in the greater New Orleans areas in developing funding plans to implement outpatient mental health programs geared toward assisting homeless, youth, and African Americans where services are not accessible or underused.

Purpose of the Study

The purpose of the quantitative study was to examine the research gap for residents of New Orleans as it pertains to the association between the continuum and utilization of outpatient mental health services for African Americans, youth, and the homeless for those diagnosed with depression and anxiety. Age, homelessness, and race show how demographics played a vital role in determining how access and use disparities existed for outpatient mental health services in New Orleans. Improving care delivery involves an improved experience of care as an additional goal to the Institute for Healthcare Improvement's triple aim framework. The framework focused on improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health care. The framework was primarily used for the study to address the goal of improving the population health in New Orleans. The risk factors of age and race can be used by health care administrators to provide evidence-based data to public and state healthcare officials illustrating residents of New Orleans need for additional outpatient mental health facilities aimed towards treating depression and anxiety.

This study was unique because it allowed me to analyze if health issues such as anxiety were caused due to the lack of outpatient mental health service facilities in African American communities. The lack of outpatient mental health services in New is a continuous problem because residents of New Orleans are not receiving adequate medical attention to return to their pre-Katrina life. Additionally, yearly as hurricane season approaches many residents of New Orleans have to relive moments from Hurricane Katrina. My intent for the study was to determine if the independent variables of outpatient mental health services, age, race, and homelessness predict the dependent variable of depression and anxiety diagnosis. Age, homelessness, and race were included in the study to determine if a relationship existed between each variable and use of outpatient mental health services.

Research Questions and Hypotheses

RQ1: Is there an association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina?

H₀₁: There is a no association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

H_{a1}: There is an association between the lack of mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

RQ2: Does an association exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina?

H₀₂: An association does not exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

H_{a2}: An association does exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

RQ3: Does an association exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina?

H₀₃: An association does not exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

H_{a3}: An association does exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

RQ4: Does an association exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina?

H₀₄: An association does not exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

H_{a4}: An association does exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

Theoretical Foundation for the Study

The theoretical framework for this study was Andersen's behavioral model of healthcare use. In mental health, Andersen's behavioral model was used primarily to identify determinants of healthcare service use among people suffering mostly from

common mental health disorders. Andersen's behavioral model for health service utilization is based on three factors which are predisposing (demographic and social) factors, enabling (economic) factors, and need (health outcomes) factors (Yan-Ning, Dong-xiao Nong, Bo, Qi-Ming & Hong-ye, 2016) Andersen's model was chosen as a theoretical framework to determine if the need factor, implementation of outpatient mental health facilities, was prevalent based on current utilization. In considering factors linked to outpatient mental health service use for patients diagnosed with depression and anxiety, outpatient mental health care use, age, race, and homelessness were used in the study to identify if there were disparities in health care usage between African Americans and other races.

Also, the sociocognitive theory (SCT) for depression and anxiety was used in conjunction with Andersen's behavioral model for healthcare use. Sociocognition is a concept to show the association between how individuals utilize available resources to sustain life and how those resources help define how a person thinks or reacts. (Atkinson, 2002). SCT encompasses how the mind, body, and world functions and integrates into one, specifically for New Orleans residents who were impacted by Hurricane Katrina. This concept was used for the study to show causation of how Hurricane Katrina's impacts contributed to anxiety and depression among residents of New Orleans. The SCT was used to further investigate systemic issues related to depression and anxiety among homeless, young, and African American people in New Orleans. Also, it was used to determine the root cause regarding why African Americans

who reside in New Orleans do not have access or do not use outpatient mental health services in the area.

Nature of the Study

The study was a quantitative analysis, utilizing a correlational research study design, of archival data using multiple logistic regression analysis, descriptive statistics, and cross-tabulations with chi-square. The rationale for the correlational research was to determine the extent of the relationship between the dependent variable anxiety and depression and the independent variables of age, race, homelessness, and outpatient mental health services. Correlational research was used to identify trends and patterns in the African American community located in New Orleans. The dependent outcome variable was depression and anxiety, as measured by residents in New Orleans who were confirmed to have an anxiety or depression diagnosis. The independent variables were outpatient mental health services, as measured by the number of residents and visits of those who sought treatment from a mental health professional post-Hurricane Katrina, age, race, and homelessness. In the study, I analyzed archival data from Data Center Research and the Hurricane Katrina Community Advisory Group found via the Inter-University Consortium for Political and Social Research (ICPSR) database at the University of Michigan, which was established in 1962 and maintains a numerous amount of social science data used for research and instruction

Literature Search Strategy and Keywords

I used Medline, CINAHL, EBSCOHost, Walden University Library, Google Dataset, and Google Scholar to search for peer-reviewed and scholarly journal articles

related to my research questions. Key words related to my variables were used to locate articles within CINAHL and Medline. I used Google Scholar and Google Dataset to assist in locating relevant datasets to support my study. Google Dataset was not helpful in identifying articles or a dataset for my research because my topic was very specific, and all variables I needed were not included in any of the datasets. Key words used in the searches were *Hurricane Katrina, New Orleans, depression, anxiety, mental health services, age, young adults, adolescents, race, African American, and utilization, mental health disorders, post-traumatic stress disorder, evacuation, disaster, and facilities*. During my searches, I sought to use material published between 2016 and 2020; however, I used older material to support my topic and research questions because most of the literature about Hurricane Katrina was published before 2016. More recent information was unavailable in some instances.

Literature Review

In the literature review, I analyze nine studies using various surveys and target populations, specifically New Orleans residents who were impacted by Hurricane Katrina. Additionally, those surveyed were age and race-specific to enhance relating anxiety and depression to lack of outpatient mental health services for those involved in a natural disaster. The literature review was based on key variables such as outpatient mental health services in New Orleans, age variation, race, and homelessness identification. The variables were used to show correlation and causation between the lack of outpatient mental health services in the New Orleans area and race, age and homelessness. Also, the review involves summarizing gaps in literature related to

demographic factors contributing to the lack and underuse of outpatient mental health services.

Literature Review Related to Key Variables

Outpatient Mental Health Services

McLeish and Del Ben (2008) conducted a quantitative study of 156 patients, evaluating depression and posttraumatic stress disorder (PTSD) in an outpatient psychiatric population pre and post Hurricane Katrina. The focus of the study was to examine symptom changes in a treatment-seeking, outpatient population. There are pre-existing psychopathology documents which identify as a risk factor for post-disaster psychopathology, but none identify symptom changes. Similarly, Xiaoling et al., (2016) assessed trends in health care utilization among adults diagnosed with serious psychological distress (SPD) from 2013-2014. The study was a comparative trend analysis of adults with and without SPD. The authors conducted the study because they determined a critical step to address the high morbidity and associated health care costs among people with mental illness is to better understand health care utilization (Xiaoling et al., 2016). Xialong et al., (2016) and McLeish and Del Ben (2008) used various statistical analyses, to include descriptive information, Pearson's correlation, one-way analyses of variance, and regression equations. The statistical analyses were used to examine the impact of the storm, show correlation among depressive and posttraumatic stress symptoms and hurricane impact variables, and analyze changes in depressive and posttraumatic stress symptoms pre- to post-hurricane (McLeish & Del Ben, 2008). Additionally, "drinking alcohol, visiting with others, smoking cigarettes, exercising,

watching television, attending church and praying were used as covariates during the regression analysis to screen potential predictors related to coping behaviors” (McLeish & Del Ben, 2008, p. 418). The study results were summarized and categorized by hurricane impact and the impact on depressive symptoms and posttraumatic stress symptoms which made the analysis clear and understandable. It was noted “depressive symptoms, as measured by the CES-D, were not related to any of the hurricane impact variables” (McLeish & Del Ben, 2008, p. 419).

Druss, Henderson and Rosenheck (2007) examined national patterns of outpatient service use by veterans who were in affected regions as a result of Hurricane Katrina, concluding veterans from New Orleans and Biloxi-Gulfport were, respectively, 73% and 41% less likely in September 2005 to use any outpatient services as were cohorts from 2003–2004. Although, Druss, Henderson and Rosenheck (2007) focused on service use of veterans, Xialong et al., (2016) study was similar because the study concluded adults with SPD utilized outpatient, inpatient, and emergency care at higher rates compared with adults without SPD (Xiaoling et al., 2016). Also, utilization of emergency department visits increased significantly over the past decade among adults with SPD, indicating a widening gap in the adequacy of services, which could be used to correlate utilization rates among veterans as well (Xiaoling et al., 2016). “Their analyses tracked use of general medical and mental/substance use services in September and October through December 2005 in New Orleans and Biloxi-Gulfport compared to a cohort receiving care during the same months in the previous 2 years” (Druss, Henderson & Rosenheck, 2007, p. 154). Druss, Henderson and Rosenheck (2007) further analyzed particularly in New

Orleans, an increase in mental health treatment, as compared to general medical services. The study was the first to examine how natural disasters affected the receipt of general medical and mental care by affected individuals (Druss, Henderson & Rosenheck, 2007). The study utilized logistic regression analysis to compare the proportion using services in 2005 with the corresponding proportion from the 2003-2004 cohorts (Druss, Henderson & Rosenheck, 2007). The covariates in the study were “age, sex, race, VA service connection, and VA pension status; service connection and pension status” (Druss, Henderson & Rosenheck, 2007, p. 154). The study results summarized many veterans were able to receive care after Hurricane Katrina, but care was from facilities outside of the New Orleans. Additionally, results showed a significant decline in mental health and substance use care. The study was easily to follow, and the variables were clearly analyzed between both sample groups. The gap in the literature was identified in the beginning of the study, which aided in understanding the methodology of how the study was conducted.

Age

Weems et al., (2016) examined the effects of adolescents who were exposed to disasters, resulting in existential anxiety about the meaning of life. The study concluded that disaster exposure levels yielded the association between existential anxiety and mental health symptoms (Weems et al., 2016). Similarly, Maclean, Popovici and French (2016) examined the impact of experiencing various natural disasters from age five on adult mental health and substance use disorders. One of the fundamental purposes of the article was to analyze factors that influence mental health disorders and how to improve

population health (Maclean, Popovici & French, 2016). Although previous studies were successful for adults, Maclean, Popovici & French (2016) and Weems et al., (2016) sought to show correlation among anxiety and mental health outcomes for adolescents. Also, the study examined the relationship between disaster exposure and aggression, suggesting natural disasters have a negative effect on individual's satisfaction of life needs (Weems et al., 2016). Participants for the study "were 325 adolescents residing in New Orleans and were exposed to Hurricane Katrina and/or Hurricane Gustav" (Weems et al., 2016, p.467). Participating youths age range was from 13 to 18 years ($M = 15.05$, $SD = 1.05$) and were 60.5% female. Anxiety was assessed utilizing EAQ, which is a 13-item measure based on Tillich's concept of existential anxiety (Weems et al., 2016). The collection period ranged from 36 to 65 months after the disaster, and because the target population was adolescent's, parent had to ensure informed consent was given prior to using the research data. Correlational and descriptive analyses were performed using SPSS 23. Weems et al., (2016) state "total EAQ scores were associated with higher levels of PTSD symptoms, $R^2 = .09$, and depression symptoms, $R^2 = .13$ (p.469)." Correlations indicated that each of Tillich's three broad domains was associated with elevated levels of PTSD and depression symptoms; however, none were correlated with exposure to disasters. Also, a series of regression analyses was performed, testing if the level of disaster exposure moderated the link between existential concerns and depression (Weems et al., 2016). The results of the regression analyses were the association between guilt/condemnation concerns and depression is significant at high (Weems et al., 2016) and experiencing one or more natural disasters by age five increases the risk of

mental health disorders throughout adult life, particularly anxiety disorders (Weems et al., 2016 & Maclean, Popovici & French, 2016). The study was hard to follow because of the EAQ measurement used for assessing anxiety. The EAQ is a concept unfamiliar to me, and I had to do additional research to determine how variables were measured.

Maclean, Popovici and French (2016) make the assumption that mental health and substance use disorders are important for clinical interventions and public policy (Maclean, Popovici & French, 2016). The analysis used data from the 2004 to 2005 National Epidemiologic Survey of Alcohol and Related Conditions, including 27,129 individuals' ages 21-64 years. (Maclean, Popovici and French, 2016). Lai, Kelley, Harrison, Thompson and Self-Brown (2015) also examined outcomes and risk factors utilized to identify typologies of distress such as patterns of posttraumatic stress (PTS), anxiety, and depression symptoms, among children exposed to Hurricane Katrina. "The study participants were 353 children between the ages of 8-15, and they were assessed 3-7 months (time 1) and 14-17 months (time 2) post-Hurricane Katrina" (Lai, Kelley, Harrison, Thompson & Self-Brown, 2015, p. 1262). The results identified three pattern groups (No Disturbance, PTS Only, and Mixed Internalizing) at Time 1 (Lai, Kelley, Harrison, Thompson & Self-Brown, 2015). The authors applied principal components factor analysis to 15 parenting strategy variables, and in all regression models, the authors controlled for standard demographics including gender, age, race, and Hispanic ethnicity (Maclean, Popovici & French, 2016). The results concluded 28.3%, 27.4%, 41.2%, and 61.2% met the APA lifetime criteria for a mood disorder, an anxiety disorder, a substance use disorder, and any type of disorder, and about 1.21% of the full sample reported

experiencing a natural disaster by age five (Maclean, Popovici and French, 2016). It was noted experiencing a natural disaster by age five increases the risk of any disorder by 9.6, 4.6, 8.9, and 3.7 percentage points (Maclean, Popovici and French, 2016). One limitation of the study with the natural disaster measure is that it was subject to potential recall bias, which could affect our regression coefficients. The article was easy to follow, and the methodology used was beneficial to the purpose and scope of the research. However, identifying topologies of distress among children post a natural disaster was not clear. Lai, Kelley, Harrison, Thompson and Self-Brown (2015) focused more on the use of latent profile analysis rather than analyzing risk factors associated with the target population. The variables were clearly defined, and the statistical analysis results for each variable were properly analyzed.

Homelessness

Substance abuse data sets from the Substance Abuse and Mental Health Services Administration were used to analyze demographics and identify trends among residents of New Orleans after Hurricane Katrina. Shuler et al., (2016) showed if treatment facilities were available in New Orleans, the facilities were not readily available to service a large number of patients or provide specialized services to unique populations. One of the unique populations were those categorized as homeless. Homeless was defined as people with no fixed address or someone who resided in a shelter (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). The proportion of homeless admissions with psychiatric illnesses in addition to substance abuse problems increased from 0% in 2000 to 41.6% in 2012 (Shuler et al., 2016). Targeted exploration

of risk factors affecting residents of New Orleans admission to treatment in New Orleans with populations such as the homeless is critical and essential (Shuler et al., 2016).

Race

Ali, Alexander, Forde, Stockton, and Ward (2016) investigated whether racial disparities in depression were present after Hurricane Katrina. A secondary analysis of a larger dataset was used, investigating the effects of a natural disaster on tobacco use (Ali et al., 2016). The sample was 932 New Orleans adults (18-74 years old) who were present when the disaster hit and returned home after displacement (Ali et al., 2016). Multiple logistic regression models were used to evaluate racial disparities and depression among African Americans and Caucasians as well as associations with social support and Hurricane Katrina stress factors relating to the mental state of many people affected by the disaster (Ali et al., 2016). The covariates considered were sex, age, household income, smoking status and lifetime PTSD (Ali et al., 2016). The results concluded African Americans had a higher average CES-D score (18.2 vs. 13.9, respectively, $p < .0001$) and higher odds of screening positive for depression (unadjusted $OR = 1.86 [1.28 - 2.71]$, $p = .0012$), compared with Caucasians (Ali, Alexander, Forde, Stockton & Ward, 2016). Scope and analysis was easy to follow due to the early identification of the purpose, significance and nature of the study. The intent was to investigate racial disparities post-Hurricane Katrina and depression and the statistical analysis presented proved the current gap in literature.

Davis, Sullivan, Vasterling, Tharp, Han, Deitch and Constans (2011) conducted a study examining racial disparities in post-disaster clinical outcomes (positive screen for

and new onset of PTSD). The sample was 304 military veterans 2-1/2 years after exposure to Hurricane Katrina. 304 military veterans identified as African Americans (149) and White (155) (Davis, Sullivan, Vasterling, Tharp, Han, Deitch & Constans, 2011). The independent variable was race with White as the reference group (Davis, Sullivan, Vasterling, Tharp, Han, Deitch & Constans, 2011). Bivariate analysis, Rso-Scott chi-square, Wilcoxon's ranked sum, and logistic regression analysis were used to compare post-Katrina diagnoses across the racial groups for the variables of interest (Davis, Sullivan, Vasterling, Tharp, Han, Deitch & Constans, 2011). The covariates in the study were age, education, income, number of chronic medical problems, lifetime traumatic events, and Katrina traumatic events which were used to show racial differences (Davis, Sullivan, Vasterling, Tharp, Han, Deitch & Constans, 2011). The aim of the quantitative study was to examine mental health outcomes following hurricanes and analyzing race as a determinant (Davis, Sullivan, Vasterling, Tharp, Han, Deitch & Constans, 2011). This study was clear and easy to follow. The research design, results and methods of data collection were properly aligned to the aim of the study. The study was unique because it focused on clinical outcomes, as opposed to previous studies showing relationships solely between race and natural disasters.

Literature Review Summary

Anxiety and depression due to the lack of mental health services were prevalent among young African Americans and continues as a problem within New Orleans, specifically as a result of Hurricane Katrina (Rhodes et al., 2010). With the literature

review I sought to relate anxiety and depression diagnosis to the lack of or under-utilization of outpatient mental health services, age, race and homeless.

The review determined homelessness and African American status are the most common factors of people diagnosed with anxiety and depression. The review also determined outpatient mental health service utilization and accessibility were not prevalent in predominantly African American communities. Some of the associated issues with African Americans who suffer with depression and anxiety within areas consisting of a lack of outpatient mental health services were criminal activity, education level, income, and post-disaster clinical outcomes.

Gaps in Literature

The literature review based on key variables for the lack of outpatient mental health services, age, race and homelessness did not demonstrate relationships between these variables as related to depression and anxiety diagnosis. Some variables were addressed throughout the literature review, but none addressed if the lack of outpatient mental health service utilization, age, race and homelessness predict depression and anxiety in young African Americans and those considered homeless; therefore, gaps in the literature exist.

The notion that African Americans had higher rates in depression and anxiety as opposed to Whites was prevalent (Ali, Alexander, Forde, Stockton & Ward, 2016). In addition, those identified as homeless and youth have higher percentages of anxiety and depression post-Hurricane Katrina (Shuler et al., 2016 & Weems et al., 2016). There is no current literature that investigates if the lack of outpatient mental health service, age,

race and homelessness predict anxiety and depression among young African Americans in New Orleans post-Hurricane Katrina. Anxiety and depression in post-disaster clinical outcomes were existent; however, there is no current literature that shows a relationship between anxiety and depression and the utilization and accessibility of outpatient mental health services.

Definitions

Anxiety Disorders: This is known as the most common class of mental disorders, with 11.6% of individuals globally having an anxiety disorder in a given year. Individuals with these disorders are characterized as being predisposed to experiencing excessive fear and/or anxiety responses to perceived threats in a way that leads to significant distress and impairment in functioning (Tomasi & Kennedy, 2019).

Depression: A mood disorder, with symptoms such as sadness, fatigue, loss of interest, and loss of appetite (World Health Organization, 2016).

Homelessness: The absence of a personal, permanent, adequate dwelling (Tipple, G. & Speak, S., 2005).

Mental Health Services: An assessment, diagnosis, treatment or counseling in a professional relationship to assist an individual or group in alleviating mental or emotional illness, symptoms, conditions or disorders (Baylor College of Medicine, n.d.).

Race: a social category, emphasizing shared social and cultural heritage and high-lighting the deleterious impact of power differentials that exist in society (Corbie-Smith, G., Henderson, G., Blumenthal, C., Dorrance, J., Estroff, J., (2008).

Assumptions

One assumption was that the Data Center provided relative data for areas of New Orleans for age, race and homelessness. I further assumed the Hurricane Katrina Community Advisory Group data provided data on mental health services and mental illnesses such as depression and anxiety. A second assumption was that the lack of outpatient mental health services in New Orleans, Louisiana post-Hurricane Katrina had a significant impact on the increase diagnosis rates for anxiety and depression. This assumption was based off of the lack of funding post-Hurricane Katrina to ensure mental health facilities were operational and accessible to all areas in New Orleans. I also assumed the impact was significantly greater among adolescent minorities and those who were classified as homeless. In my literature review, there were multiple studies which contribute to this assumption. It was assumed young minorities who were affected by Hurricane Katrina were significantly impacted in terms of mental health, anxiety and depression. Another assumption was if the focus for public health officials were shifted towards increasing mental health services and providers, the number of anxiety and depression diagnosis would decrease.

Scope and Delimitations

The scope of the study was descriptive with conclusions derived from the data received and analyzed from the Hurricane Katrina Community Advisory Group and The Data Center. The variables of outpatient mental health services, age, race and homelessness and their association to depression and anxiety presented a gap in literature.

The study involved a target population of approximately 3000 people affected by Hurricane Katrina in New Orleans.

The study was limited to people who were affected or displaced by Hurricane Katrina, used or had used outpatient mental health services, and were young and African American. The boundaries of the study were related to the target population. A population with various age groups and races was identified, but the research on the homeless population was limited. When identifying the homeless population, time played a significant role. People who were displaced and returned may not have classified as homeless even if their home was nonexistent.

Significance, Summary, and Conclusions

This study was to identify how demographics impact accessibility and use of outpatient mental health services and how lack of outpatient mental health services is associated with anxiety and depression diagnosis for New Orleans residents post-Hurricane Katrina. The identification of this gap contributes to the health care administration in examining and analyzing the relationships between outpatient mental health care use and anxiety and depression. The study contributes to increased awareness of access to mental health services for the people of New Orleans. The increase in access to health care for those diagnosed with depression and anxiety would significantly impact the area by helping patients within those communities. This is accomplished by providing the means and resources to develop adequate mental health services, contributing to a positive social change in the area. The natural disaster context provided the opportunity to test the association between acute declines in SES and long-term

health among other significant problems, especially traumatic stress associated with natural disasters of the proportion of Hurricane Katrina. A geospatial analysis of areas impacted by Hurricane Katrina in New Orleans would assist health care administrators and public health officials to identify various determinants of mental healthcare which contribute to the under-utilization or lack of mental health services for those diagnosed with depression and anxiety. Implications for positive social change will result in assisting health administrators and mental health providers in developing a plan which integrates mental health services in areas where these services do not exist.

Section 2: Research Design and Data Collection

In Section 1, I reviewed current literature related to outpatient mental health services, age, race, and homelessness as well as anxiety and depression with data from the Hurricane Katrina Community Advisory Group and the Data Center. The Hurricane Katrina Community Advisory Group data, which measured and analyzed the pre and post Hurricane Katrina social, mental, and physical state of residents of New Orleans, was from 2006. Data obtained from the Data Center on race and age was from Census Bureau vintage 2018 population estimates and Census 2000 Summary File 1 (SF1) which is the 100-percent data of all people in every household unit. A gap exists considering Andersen's behavioral model for healthcare use and the SCT in terms of assessing outcomes of anxiety and depression for New Orleans residents post-Hurricane Katrina with outpatient mental health service use in terms of demographics such as race, age, and homelessness.

The purpose of the study was to quantitatively analyze the research gap for residents of New Orleans, regarding continuum of outpatient mental health services for African Americans, youth, and homeless individuals for those diagnosed with depression and anxiety. Outcomes of depression and anxiety diagnoses as predicted by outpatient mental health services in terms of race, age, and homelessness was relevant to healthcare administration because after Katrina found African Americans compared with Caucasians were more likely to report being depressed as a result of Katrina. This section includes the research design, methodology, and statistical tools used to address the gap in literature.

Research Design and Rationale

The dependent variable was anxiety and depression, and the independent variables were outpatient mental health services, race, age, and homelessness. To determine if the independent variables predicted the dependent variable, I used a quantitative correlational research design with data from the Data Center and the Hurricane Katrina Community Advisory Group with a date range between 2006 and 2018. Data were used to perform multiple regression analysis.

Methodology

Study Population

The target population for this research were people in New Orleans who were impacted by Hurricane Katrina and diagnosed with anxiety and depression. Data from the Data Center on race/ethnicity and age was from the Census Bureau vintage 2018 population estimates and SF1, was used to analyze anxiety and depression among young minorities, specifically African Americans. Data obtained from the Hurricane Katrina Community Advisory Group was used to analyze the relationship between anxiety and depression and outpatient mental health services.

Sampling and Sampling Procedures

The Data Center is one of the most trusted sources for data pertaining to Southeast Louisiana. Data regarding information on race and age post-Hurricane Katrina broke down into three groups which are African Americans, Whites, and Hispanics. There are now fewer African Americans living in New Orleans compared to 2000, but there was also a significant decrease in Caucasians (The Data Center, n.d.). The age range for the

data was between 5 and 85; however, for this study, the primary age ranges considered was between 5 and 49 because the categories for the target population involved children, adolescents, teenagers, young adults, and adults.

The Hurricane Katrina Community Advisory Group consists of a broad cross section of people affected by Katrina, including people who resided in the New Orleans metropolitan area at the time of the hurricane and those who resided in counties or parishes in Alabama, Louisiana, and Mississippi that were also in the path of the hurricane. Data involving anxiety and depression diagnosis and outpatient mental health service visits enabled me to analyze survivors' physical and mental health and barriers to treatment.

The sampling strategy was relevant because nearly 40% of resident of New Orleans had probable mental illness 1 year after the storm, and half of these illnesses were classified as severe (Sastry, N., & VanLandingham, M., 2009). These rates were substantially higher than rates of mental illness prior to Hurricane Katrina in the Gulf States region, according to results from the National Comorbidity Study Replication conducted between 2001 and 2003 (Sastry, N., & VanLandingham, M., 2009). However, it was impossible to gather data for all personnel affected by Hurricane Katrina who were diagnosed with anxiety and depression. Additionally, access and utilization rates were not available if outpatient mental health facilities did not record the data as it pertains to patient visits.

Data Center data was public and after submission of a request for data, the excel spreadsheets which contained data about age and race were emailed to me by the

organizations representative. The Hurricane Katrina Community Advisory Group had public released data available for use. However, due to sensitivities involving anxiety and depression, restricted data was requested and released, including anxiety and depression diagnosis, homelessness, and outpatient mental health services data.

Power Analysis

G*Power is a free power analysis software, and this is how the sample size was determined for this study. The results of the analysis was a total sample size of 568 for the regression analysis (see Table 1). The effect size was determined using G*Power's regression analysis priori function.

Table 1

*Logistic Regression Power Analysis Using G*Power*

Input	Tail(s)	Two
	Effect Size	0.05
	Power (1- β err prob)	0.8
Output	Total Sample Size	568
	Actual Power	0.800103

Operationalization of Variables

One dependent variable and four independent variables were examined in this study. Anxiety and depression was the dependent variable. Race, age, homelessness, and outpatient mental health services were the independent variables (see Table 2).

Anxiety and depression was measured in terms of the number of people diagnosed as a result of Hurricane Katrina. The race categories were African Americans, Caucasians, Hispanics, and other. The age categories were young children, adolescents, teenagers, and adults. The independent variable of outpatient mental health services referred to the number of visits by people diagnosed with mental health disorders such as anxiety or depression.

Table 2

Dependent and Independent Variables

Dependent Variable	Independent Variables
Anxiety and Depression	Outpatient Mental Health Services Race Age Homelessness

Data Analysis Plan

I examined data from the Data Center and the Hurricane Katrina Community Advisory Group using Statistical Package for Social Sciences (SPSS) Version 25. Weighting was used for the Hurricane Katrina Community Advisory Group data to adjust for differential probability of selection depending on the number of sampling frames in which each person in the population was represented. Additional weight was used to adjust because only one person per household was able to participate in the study. A final post-stratification weight was also used to adjust for residual discrepancies between the actual sample and data obtained from the United States Bureau of the Census on the characteristics of people who lived in the affected areas.

Research Questions and Hypotheses

RQ1: Is there an association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina?

H₀₁: There is a no association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

H_{a1}: There is an association between the lack of mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

RQ2: Does an association exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina?

H₀₂: An association does not exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

H_{a2}: An association does exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

RQ3: Does an association exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina?

H₀₃: An association does not exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

H_{a3}: An association does exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

RQ4: Does an association exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina?

H₀₄: An association does not exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

H_{a4}: An association does exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

Detailed Analysis Plan

The statistical test used to test all hypotheses was cross-tabulations with chi-square followed by multiple logistics regression analysis. The intent of analysis was to examine the relationships between outpatient mental health services, homelessness, race and age in predicting anxiety and depression in New Orleans residents post-Hurricane Katrina. The value of multiple logistics regression is the ability to examine the effects of two or more independent variables to predict a value of a dependent variable. Odds ratio measured the effect size, determining the extent to which the independent variables predict the dependent variable. Results of the study were based on the conventional threshold of 0.05 for the p-value.

Threats to Validity

External Validity

Data for this study were derived from a secondary data source and can be applied outside of the context of Hurricane Katrina. Because the data from the Hurricane Katrina Community Advisory Group was derived from telephonic interviews and the questions were derived from problems that continued at the time of the interview, the current overall population health of New Orleans could not be determined. The data I used for the study were not separated by zip codes, which could be relevant due to the fact that different neighborhoods or areas in New Orleans have health disparities due to the lack of access or underutilization of outpatient mental health services. Also, statistical tests of

significance were computed at the 95% confidence level. It was noted the differences between two time periods or geographies were not significant, and therefore are the result of sampling variability rather than real change in characteristics of the population.

Internal Validity

A major challenge the data presented was the collection timeframe for the data. Because Hurricane Katrina occurred 14 years ago, many of the geographical locations are either non-existent or have completed the gentrification process, resulting in better infrastructure which could affect the number of homeless people or displaced people who returned to their homes. Therefore, an in-depth analysis of these areas was considered to ensure the data obtained for the study is still relevant today. Homelessness data presented was not indicative of someone not having a permanent shelter. Consequently, those categorized as homeless could potentially be living in temporary housing or with family or friends; however, they identify as homeless because they did not have a home for themselves.

Construct Validity

Data accuracy from respondents of the Hurricane Katrina Community Advisory Group was only as good as what the person selected disclosed; therefore, answers on sensitive areas such as diagnosis of anxiety and depression may not have been completely accurate. However, the weighted data could increase the room for errors. The significance tests required both estimates and their standard errors. Lastly, Advisory Group members were weighted to approximate the distribution of the cross-classification of these variables at that level of geographic aggregation.

Ethical Procedures

data obtained from the Data Center and the Hurricane Katrina Community Advisory Group did not identify participants by name and there were no other personally identifiable information included in the data sets. There were no existing risks to confidentiality due to the study group participants not identifying themselves. All data received for the study was downloaded and stored on a personal computer. Once the study is final or completed, all data will be deleted, and a signed letter will be sent to the data provider. The letter will identify dates, times and location of where the data was deleted for records keeping.

Summary

Section 2 described using Data Center and Hurricane Katrina Community Advisory Group data sets to conduct a quantitative study, using cross-tabulations with chi-square and multiple logistic regression analysis. The study determined if the demographic variables of race, age and homelessness as well as outpatient mental health services predict the outcome variable of anxiety and depression. Section 2 provided the methodology for the study, and Section 3 provides the statistical findings.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of this quantitative study was to use Andersen's behavioral model for healthcare use and Atkinson's SCT to analyze the research gap for residents of New Orleans between the continuum and utilization of outpatient mental health services for African Americans, youth, and the homeless for those diagnosed with depression and anxiety. Hurricane Katrina Community Advisory Group data conducted in 2006 contained the dependent variable anxiety and depression and the independent variables of outpatient mental health services, age, race, and homelessness. Data used from the Data Center, based on Census Bureau vintage 2018 population estimates and SF1, contained information on the independent variables age and race. The predictor variable outpatient mental health services was used to determine if anxiety and depression were contributing factors anxiety and depression diagnoses for African American homeless youth in New Orleans post-Hurricane Katrina. Additionally, multiple logistic regression and crosstabulations with chi-square were performed to test the association between the independent variables of age, race, homelessness, and outpatient mental health services.

The dependent variable was anxiety and depression. The independent variables were outpatient mental health services, race, age, and homelessness. Age, homelessness and race were included in the study because these characteristics are associated with access and use of outpatient mental health services. Research questions and associated hypotheses follow.

RQ1: Is there an association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina?

H₀₁: There is a no association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

H_{a1}: There is an association between the lack of mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

RQ2: Does an association exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina?

H₀₂: An association does not exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

H_{a2}: An association does exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

RQ3: Does an association exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina?

H₀₃: An association does not exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

H_{a3}: An association does exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

RQ4: Does an association exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina?

H₀₄: An association does not exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

H_{a4}: An association does exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

Section 3 includes results of statistical analyses (multiple logistic regression and cross tabulations with chi-square) of data from the Data Center and Hurricane Katrina Community Advisory Group ranging between 2006 and 2018. In this study, I provide descriptions of the timeframe during which the data were collected, demographic and descriptive characteristics of the target population, discrepancies or limitations of the data set, univariate analysis of the data, and a conclusion summarizing the results.

Data Collection of Secondary Data

Time Frame, Response Rates, and Discrepancies or Limitations of the Data Set

I used data between 2006 and 2018 from the Data Center and Hurricane Katrina Community Advisory Group. The data collected for the study involved people in New Orleans post-Hurricane Katrina who were diagnosed with anxiety and depression. The dataset obtained from the Data Center was unique for this study because the information was specific to disaster recovery, regional economic analysis, workforce development, racial disparity indicators, blight reduction, affordable housing, and coastal population movements. Data about New Orleans were widely used for tracking rebuilding efforts in the city, and the first post-Hurricane Katrina U.S. Census halted a loss of approximately

\$61 million. The Hurricane Katrina Community Advisory Group consists of a broad representative sample of 3000 people who were affected by Hurricane Katrina and were telephonically interviewed between January 19 and March 31, 2006.

The archival data set from the Data Center comprised of a population sample of 388,182 New Orleans residents who lived in New Orleans post-Hurricane Katrina. The intent of using this data was to conduct multiple logistics regression analysis and cross tabulations with chi-square to determine if a relationship exists between the dependent variable, anxiety and depression, and the independent variable lack of outpatient mental health services. However, after review of the data set, I concluded, I could not use this data set for my analysis because the surveys conducted were for a different population of people residing in New Orleans. The population used for anxiety and depression analysis was obtained from The Hurricane Katrina Community Advisory Group data set. After conducting additional research, it was determined the use of two data sets from a different population sample would affect the validity and reliability of the study, potentially yielding different results for each sample. Therefore, a limitation exists for using this data set and The Hurricane Community Advisory Group data was the only data set used to show relationship between the dependent variables and all the independent variables.

The archived data from the Hurricane Katrina Community Advisory Group comprised of 3,000 people who were affected by Hurricane Katrina. The screening response rate was 64.9%. The participation rate among screening survey respondents was 41.9%. Weighting was used to adjust for differential probability of selection depending

on the number of sampling frames in which each person in the population was represented. An additional weight was used to adjust for the fact that only one respondent in each sample household was selected to participate in the Advisory Group regardless of the number of eligible people living in that household. I utilized the subpopulation of people who indicated an instance of anxiety and depression, representing 1,043 weighted cases. The G*Power analysis required a sample size of 568 (power= 0.80, alpha=0.05). There were no discrepancies in the data noted. Limitations to the data set were the dependent variable of depression was not analyzed because there were no respondents who answered yes on the survey for this particular question. Additionally, anxiety was analyzed as those who received professional treatment for anxiety. The independent variable of race was analyzed using ethnicity data from the survey, and homelessness was analyzed under the variable first placed stayed after evacuation using the subsets of people who lived in a hotel or motel, rooming house or YMCA, evacuation center, and any other place. These limitations were not apparent until the data was downloaded. Nonapplicable data was excluded from the analysis and variables not part of the study were removed. In addition, outpatient mental health services was categorized to combine people who received professional counseling from a mental health counselor, psychotherapist social worker, psychiatrist, or psychologist. Age categories were 18 to 39, 40 to 59, and 60 and older.

Baseline Characteristics and Population Representativeness

Table 3 shows descriptive statistics of the weighted categorical variables using the sample of 1043 cases. There were missing cases for the variables of anxiety, depression,

homelessness and outpatient mental health services which are addressed later for each variable. The analysis included the dependent variable, anxiety, with a frequency of 143 or 13.7%. The dependent variable, depression, was not available for further analysis because a response of yes was not recorded, and there were 1037 missing cases according to Table 3. The analysis also included the independent variables outpatient mental health services, race, age, and homelessness.

Table 3 also shows the independent variable age with groupings of 18 to 39, 40 to 59, and 60 and older for the 1043 cases were 315 or 30.2%, 483 or 46.3%, and 245 or 23.5%, respectively. The independent variable of race for Hispanics, Non-Hispanic Black, Other, and Non-Hispanic White for 1043 cases were 35 or 3.4%, 270 or 25.9%, 31 or 3.0%, 707 or 67.8%, respectively. The independent variable of homelessness for 1043 total cases with 286 missing cases for those who resided in a hotel or motel, a rooming house or YMCA, evacuation center, shelter, home or friend, a rental apartment, any other place, and those who didn't know was 225 or 21.6%, 3 or .3%, 6 or .6%, 18 or 1.7%, 395 or 37.9%, 11 or 1.1%, 98 or 9.4%, and 1 or .1%, respectively. Lastly, the independent variable outpatient mental health services for 1043 total cases with 262 or 25.1% missing cases for those who did receive professional counseling, did not receive professional counseling, and did not know were 78 or 7.5%, 696 or 66.7%, and 7 or 0.7%, respectively.

Table 3

Descriptive Statistics

Variable	Frequency	Percent (%)
Get Professional Treatment for Anxiety Attacks		
Yes	143	13.7
No	119	11.4
Don't Know	2	0.2
Missing Cases	779	74.7
Health Problems: Depression?		
No	5	0.5
Don't Know	1	0.1
Missing Cases	1037	99.4
Age Categories		
18-39	315	30.2
40-59	483	46.3
60+	245	23.5
Ethnicity		
Hispanic	35	3.4
Non-Hispanic Black	270	25.9
Other	31	3
Non-Hispanic White	707	67.8
First Place Stayed after Evacuation		
A Hotel or Motel	225	21.6
A Rooming House or YMCA	3	0.3
Evacuation Center	6	0.6
Home of Friend or Relative	395	37.9
A Rental Apartment	11	1.1
Any other place	98	9.4
Don't Know	1	0.1
Missing Cases	286	27.4
Received Professional Counseling		
Yes	78	7.5
No	696	66.7
Don't Know	7	0.7
Missing Cases	262	25.1

The Hurricane Katrina Community Advisory Group consists of a broad cross-section representative sample of 3000 people who were affected by Hurricane Katrina (Kessler, 2010). The baseline telephone survey of 1043 adult (ages 18+) pre-hurricane residents of the counties (in Alabama and Mississippi) and parishes (in Louisiana) directly affected by Hurricane Katrina was carried out between January 19 and March 31, 2006, using a multiple-frame sample design to recruit the Advisory Group (Kessler 2010). The data was survey-based rather than population-based. This constraint of the target sample, which are typical of telephone surveys, exclude 6-8% of the population from the sample frame. However, the sample was relevant to the study because of the significant impact the \$34 million budget cut for psychiatric hospitals statewide in Louisiana in 2012, resulting in the removal of 10 to 20 emergency department psychiatric bed, 23 emergency department psychiatric technicians, and closure of various mental health facilities (Barrow, 2012; Maldonado, 2012).

I considered the dependent variable anxiety and the independent variables of outpatient mental health service, race, age, and homelessness. Race, age, and homelessness were included in the study because these characteristics are associated with access and utilization of outpatient mental health services. However, as explained, depression was not analyzed due to the majority of data consisting of missing data and no affirmative responses.

Study Results

This subsection includes the statistical assumptions, research questions, and results of the study. Additionally, it consists of the hypotheses test results and answers to research questions. Lastly, it concludes with a summation of the study results.

Statistical Assumptions

There are two assumptions of cross-tabulations with chi-square. The first assumption is the two variables should be measured at either an ordinal or nominal level. The second assumption is the two variables consist of two or more categorical independent groups and no cells have an expected count of less than 5. The assumptions of multiple logistic regression are the outcome is a binary or dichotomous variable, a linear relationship exists between the logit of the outcome and each predictor variables, no influential values (extreme values or outliers) in the continuous predictors, and no high intercorrelations (i.e. multicollinearity) among the predictors. All statistical assumptions for cross tabulations with chi-square were not met. Each cross tabulation with the exception of age had had expected counts less than 5; therefore, they were not analyzed. All statistical assumptions for multiple logistic regression were met. As a result of this, cross tabulations with chi-square and multiple logistic regression were executed and analyzed in SPSS for the dependent variable, anxiety, and each of the independent variables. The independent variables were age, race, outpatient mental health services, and homelessness. One of the advantages of multiple logistics regression is the ability to analyze the effects of two independent variables on the dependent variable. This is done by controlling the effect of one variable while simultaneously analyzing the

effect of another variable. Consequently, each independent variable's effect can be isolated separately.

Research Questions

RQ1: Is there an association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina?

H₀₁: There is a no association between the lack of outpatient mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

H_{a1}: There is an association between the lack of mental health services and depression and anxiety diagnosis rates among people in New Orleans as a result of Hurricane Katrina.

RQ2: Does an association exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina?

H₀₂: An association does not exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

H_{a2}: An association does exist between the lack of outpatient mental health services and homelessness within New Orleans as a result of Hurricane Katrina.

RQ3: Does an association exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina?

H₀₃: An association does not exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

H_{a3}: An association does exist between the lack of outpatient mental health services and race within New Orleans as a result of Hurricane Katrina.

RQ4: Does an association exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina?

H₀₄: An association does not exist between the lack of outpatient mental health services and age in New Orleans as a result of Hurricane Katrina.

Results of Cross Tabulations

Unweighted two-way cross tabulations per SPSS output were performed per Table 4. Table 4 displays cross tabulations with the associated p-value and Pearson chi-square test for independence which was used to determine if an association exists between independent categorical variables. The categorical variables examined were received professional counseling (outpatient mental health services), first place stayed after evacuation (homelessness), ethnicity (race), and age. The Pearson chi-square test is utilized to test relationships between categorical variables. It is also used to test the null hypothesis that no relationship exists (Laerd Statistics, n.d.a.). Based on the significance of the Pearson chi-square test and utilizing the conventional threshold of .05, the categorical variable of age (p-value= 0.015) was statistically significant in relation to the categorical variable received professional counseling (outpatient mental health services). Additionally, the categorical variables of first place stayed after evacuation (homelessness) (p-value= 0.997) and ethnicity (race) (p-value= 0.103) were not statistically significant.

Results of Multiple Logistic Regression

Weighted multiple logistic regression was conducted utilizing SPSS with a 95% confidence level. Table 5 indicates the independent variable ethnicity (race) (p-value=0.013), specifically non-hispanic black (0.003) was statistically significant in predicting received professional counseling (outpatient mental health services). The independent variables age (p-value= 0.478), first place stayed after evacuation (homelessness) (p-value= 0.796) and received professional counseling (outpatient mental health services) (p-value= 0.152) were not statistically significant, as the p-values were about the conventional threshold of .05. For the purpose of the study, the independent variable homelessness was measured using the sub-categories of the variable first place stayed after evacuation which were hotel or motel, rooming house or YMCA, evacuation center and any other place. Per Table 6, all categories of first placed stayed after evacuation (homelessness) were not statistically significant. Outpatient mental health services were measured by the variable received professional counseling.

As displayed in Table 5, considering the significant independent variable, ethnicity-non-hispanic black, the odds ratio of 3.86 for non-hispanic blacks implied a person with anxiety who identified as a non-hispanic black had statistically significant higher odds of being diagnosed with anxiety than a person who was non-hispanic white.

Table 4

Cross Tabulations with Pearson Chi-Square

Variable	Received Professional Counseling										Pearson Chi-Sq <i>p</i> -value	
	Yes		No		Don't Know		Total		Missing			
	N	%	N	%	N	%	N	%	N	%		
First Place Stayed after Evacuation									459	44.01	3.726	0.997
A Hotel or Motel	15	8.15	169	91.85	1	0.54	184	17.64				
A Rooming House or YMCA	0	0.00	3	100.00	0	0.00	3	0.29				
Evacuation Center	1	25.00	3	75.00	0	0.00	4	0.38				
Shelter	1	7.69	12	92.31	0	0.00	13	1.25				
Home of Friend or Relative	34	11.49	262	88.51	3	1.01	296	28.38				
A Rental Apartment	1	11.11	8	88.89	0	0.00	9	0.86				
Any other place	7	10.14	62	89.86	1	1.45	69	6.62				
Don't Know	0	0.00	1	100.00	0	0.00	1	0.10				
Total	59	10.19	520	89.81	5	0.86	579	55.51				
Ethnicity									262	25.12	10.548	0.103
Hispanic	6	20.69	23	79.31	0	0.00	29	2.78				
Non-Hispanic Black	19	8.52	204	91.48	0	0.00	223	21.38				
Other	0	0.00	21	100.00	0	0.00	21	2.01				
Non-Hispanic White	53	10.58	448	89.42	7	1.40	501	48.03				
Total	78	10.08	696	89.92	7	0.90	774	74.21				
Age Categories									262	25.12	12.31	0.015
18-39	24	10.08	214	89.92	1	0.42	238	22.82				
40-59	46	12.37	326	87.63	2	0.54	372	35.67				
60+	8	4.88	156	95.12	4	2.44	164	15.72				
Total	78	10.08	696	89.92	5	0.65	774	74.21				

Table 5

Significant Results of Weighted Multiple Logistic Regression for Anxiety

Independent Variables	Odds Ratio	95% Confidence interval		p-value
		Lower	Upper	
Age Categories				0.478
18-39 vs 60 +	1.972	0.639	6.085	0.237
40-59 vs 60+	1.493	0.506	4.404	0.468
Ethnicity				0.013
Hispanic vs Non-Hispanic White	1.664	0.33	8.39	0.537
Non-Hispanic Black vs Non-Hispanic White	3.86	1.594	9.349	0.003
Other vs Non-Hispanic White		0.672	24.98	0.126
First Place Stayed after Evacuation				0.796
A Hotel or Motel vs Don't Know	0.00	0.00		1.00
A Rooming House or YMCA vs Don't Know	0.00	0.00		0.999
Evacuation Center vs Don't Know	0.00	0.00		1.00
Home of Friend or Relative vs Don't Know	0.00	0.00		1.00
A Rental Apartment vs Don't Know	0.00	0.00		1.00
Any other place vs Don't Know	0.00	0.00		1.00
Received Professional Counseling				0.152
Yes vs. Don't Know	0.00	0.00		1.00
No vs Don't Know	0.00	0.00		1.00

Hypothesis Test Results

RQ1. RQ1 sought to determine if the dependent variable anxiety could be predicted from the independent variable outpatient mental health services. Multiple

logistic regression determined with a 95% confidence level that the independent variable outpatient mental health services was not significant in predicting the dependent variable anxiety. The relationship between the variables was not statistically significant per Table 5 (p-value= 0.152), as the p-value was well above the conventional threshold of 0.05. Also, because lack of outpatient mental health services is not a statistically significant predictor for anxiety, per Table 5, the odds ratios of 0.00 for yes versus don't know and 0.00 for no versus don't know, are associated with no lower odds of being diagnosed with anxiety or not. Consequently, lack of outpatient mental health services does not predict anxiety for those affected by Hurricane Katrina and H_01 is accepted.

RQ2. Research question two sought to determine if there was an association between the variable lack of outpatient mental health services and homelessness. Cross tabulations, per Table 4, determined that the variables lack of outpatient mental health services and homelessness did not have an association. The relationship between the variables was not statistically significant per Table X (p-value= 0.997), as the p-value was well above the conventional threshold of 0.05. Therefore, an association does not exist between lack of outpatient mental health services and homelessness and H_02 is not accepted.

RQ3. Research question three sought to determine if there was an association between the variable lack of outpatient mental health services and race. Cross tabulations, per Table 4, determined that the variables lack of outpatient mental health services and race did not have an association. The relationship between the variables was not statistically significant per Table X (p-value= 0.103), as the p-value was well above the

conventional threshold of 0.05. Therefore, an association does not exist between lack of outpatient mental health services and race and H_03 is not accepted.

RQ4. Research question four sought to determine if there was an association between the variable lack of outpatient mental health services and age. Cross tabulations, per Table 4, determined there is an association between the variables lack of outpatient mental health services and age. The relationship between the variables was statistically significant per Table X (p-value= 0.015), as the p-value was well below the conventional threshold of 0.05. Therefore, an association does exist between lack of outpatient mental health services and age and H_a4 is accepted, rejecting the null hypothesis.

Answers to Research Questions

RQ1 was answered with lack of outpatient mental health services does not predict anxiety. Research question two was answered with an association does not exist between lack of outpatient mental health services and homelessness. RQ3 was answered with an association does not exist between lack of outpatient mental health services and race. Research question four was answered with an association does exist between lack of outpatient mental health services and age. However, due to the chi-square results and not meeting the assumptions of the chi-square test, the strength of the association could not be determined.

Summary

Section 3 displayed the results and findings of my study. It also included information on how the data was collected for analysis, multiple logistics regression, cross tabulations and Pearson chi-square analyses. Lastly, it presented the hypotheses

test and research questions, concluding with key findings of the study. The study examined data from the Hurricane Katrina Community Advisory Group ranging from January 19 to March 31, 2006 and sought to determine if the independent variable lack of outpatient mental health services predicted anxiety. It also was used to determine if an association exists between the variable lack of outpatient mental services and the variables homelessness, race, and age.

Section 4 includes an interpretation of the study. The section also correlates findings of this study to past peer-reviewed literature, while subsequently providing an interpretation of Andersen's behavioral model for healthcare use and Atkinson's SCT. Lastly, Section 4 includes limitations, recommendations, and conclusions for the study.

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

The purpose of the study is to quantitatively analyze the research gap for residents of New Orleans between the continuum and utilization of outpatient mental health services for African Americans, youth, and the homeless for those diagnosed with depression and anxiety. Findings indicated a significant association between age and lack of outpatient mental health services. Findings from multiple logistics regression indicated a significant association between anxiety and race. Conversely, findings from the chi-square indicated no significant predictive association between outpatient mental health services and homelessness and race. Also, findings from multiple logistics regression indicated no significant predictive relationships between anxiety and age, homelessness, and outpatient mental health services. Section 4 includes a detailed analysis and interpretation of findings, limitations to the study, recommendations for more in-depth research, and implications for social change and professional practice.

Interpretation of Findings

The variable race was a significant predictor of anxiety for people in New Orleans post-Hurricane Katrina. Non-Hispanic Blacks had lower odds of having anxiety. Non-Hispanic Blacks had significant lower odds than Whites in terms of having anxiety compared to Hispanic versus non-Hispanic Whites and others versus non-Hispanic Whites. Others referred to residents with any other race besides non-Hispanic blacks, non-Hispanic Whites, and Whites.

Outpatient mental health services was not a significant predictor of anxiety. Additionally, homelessness and race were not significant and did not show an association

with outpatient mental health services. However, age was significant, and an association between outpatient mental health services and age does exist. Age significantly increased the odds of using outpatient mental health services. In the next sections, I compare the findings to show the association between the independent variable race and the dependent variable anxiety, as well as the association between the independent variables age and outpatient mental health services. The theoretical frameworks were also used to understand how age affects non-Hispanic blacks' utilization of outpatient mental health services and how race is an indicator for anxiety diagnosis among New Orleans residents post-Hurricane Katrina.

Findings of the Literature

The results of my statistical analysis indicated race was a significant predictor of anxiety, and age had an association with non-Hispanic black utilization of outpatient mental health services. Race lowered the odds of anxiety diagnosis for residents of New Orleans post-Hurricane Katrina. My findings also indicated a positive relationship does exist between age and outpatient mental health services. As age increases outpatient mental health service utilization increases. My findings indicated outpatient mental health service use was not a significant predictor of anxiety. My findings also indicated race and homelessness did not have an association with outpatient mental health service use. In the next sections, I present findings for each variable that were significant predictors of anxiety, as well as variables that had an association with outpatient mental health care service use.

Race. Davis et al., (2012) determined differences between post-Katrina PTSD and other related mental health illnesses and lifetime traumatic events and stressors, including Hurricane Katrina and military combat for African American survivors. Ali et al., (2016) determined African Americans had a higher average Center of Epidemiologic Studies-Depression (CES-D) score and higher odds of screening positive for depression compared with Caucasians. CES-D is a 20-item measure or assessment which rates depression levels over a week time period. My study concluded non-Hispanic Blacks had statistically lower odds of being diagnosed with anxiety compared to non-Hispanic Whites. African Americans are more likely to have stressors associated with events like Hurricane Katrina and having higher odds of screening positive for anxiety or depression.

Age. Maclean et al., (2016) determined experiencing one or more natural disasters by age 5 increases the risk of mental health disorders throughout adult life, particularly anxiety disorders. According to Xiaolong (2016), adults with SPD and other mental health illnesses use outpatient, inpatient, and emergency care at higher rates compared to adults without SPD. Adults with SPD or other mental health illnesses had a higher utilization rate for outpatient mental health services as opposed to those without SPD.

From my study, I concluded race lowered the odds of anxiety diagnosis for residents of New Orleans post-Hurricane Katrina, whereas outpatient mental health care service use was not a significant predictor of anxiety. Additionally, homelessness and race did not have an association with outpatient mental health service use. As a result of multiple logistic regression analysis, 25.9% of non-Hispanic Blacks in New Orleans

received outpatient mental health services counseling to treat anxiety. Residents of New Orleans who were diagnosed with anxiety post-Hurricane Katrina typically had more visits to seek outpatient mental health services.

The independent variable age had a positive relationship with non-Hispanic blacks use of outpatient mental health services According to my study, 30.2% of adults in New Orleans between 18 and 39 used outpatient mental health services in New Orleans post-Hurricane Katrina. Adults must seek assistance via outpatient mental health services to address issues related to anxiety to improve population health and address decrease mental health issues in New Orleans.

Findings Related to Theory

Use of outpatient mental health services for non-Hispanic Blacks between the ages of 18 and 39 is relevant to address and analyze because these variables are considered predictors of anxiety for residents of New Orleans post-Hurricane Katrina. Andersen's behavioral model of health is primarily used to identify determinants of health care services use for mental health reasons among people suffering mostly from common mental health disorders. Also, the SCT is a concept introduced by Atkinson to show relationships between how the mind, body, and world functions and integrates into one, specifically for New Orleans residents who were impacted by Hurricane Katrina. As a result, I determined Andersen's behavioral model for healthcare use and Atkinson's SCT are applicable theoretical frameworks for this study.

The variables of outpatient mental health services, age, race, and homelessness were included in the study because in the past these variables have shown an association

with increased diagnosis rates among people who have experienced traumatic experiences. The analysis suggests that race is a predictor of increased anxiety diagnosis within a particular subgroup of the population, specifically African Americans. The analysis also suggests that adults between the ages of 18 and 39 frequent outpatient mental health services more often than young adults and those 40 and over. The variables that were found significant in this study were indicative of health disparities within certain populations within New Orleans post-Hurricane Katrina.

Limitations of the Study

There were limitations in the research data set as it pertains to reliability, validity and generalizability. Data were from the Hurricane Katrina Community Advisory Group. All variables previously identified were included in the premise, prospectus and proposal documents. The data set was from 2006, following the devastation of Hurricane Katrina in 2005, and a more recent data set would have reduced validity issues, while simultaneously analyzing current problems with anxiety and lack of outpatient mental health services. After conducting G*Power analysis, my required sample size for logistics regression was 568 (power = 0.80, alpha = 0.05, and odds ratio 1.3). The actual sample size once the data was downloaded was 1043. However, generalizability was a limiting factor because based on the number of respondents and the limitation of asking one person per household, the results could be indicative of the entire population of New Orleans post Hurricane Katrina. Also, the data set was weighted to adjust for differential probability for selection of the sample.

Recommendations

Based on the limitations of the study, primarily the timeframe the data was collected, it would be recommended to conduct an analysis on pre and post Hurricane Katrina anxiety and outpatient mental health services in New Orleans. The pre and post analysis would show a trend analysis and potentially find another research gap in the literature which shows how many people were diagnosed with anxiety prior to the disaster as compared to after the disaster occurred. This would significantly strengthen associations between the independent variables race, age, and homelessness and outpatient mental health services. Furthermore, the research could have been extended to focus on showing relationships to the dependent variable anxiety and the independent variables age, race and homelessness. The analysis between these variables would have indicated what age groups, races and homeless people were predictors for the outcome variable anxiety.

Implications for Professional Practice and Social Change

This section provides implications for professional practice and social change which would be relevant to predicting anxiety with race. Additionally, it would be relevant to showing association between lack of outpatient mental health services and age groups. In 2012, a \$34 million budget cut from hospitals statewide in Louisiana largely affected outpatient treatment facilities in New Orleans, resulting in closures of 10 to 20 psychiatric beds in emergency departments and a drastic decrease in psychiatric nurses and technicians. With a decline in outpatient mental health services to treat non-Hispanic blacks in New Orleans post-Hurricane Katrina, the city cannot effectively provide mental

health assistance to a large percentage of the population. As underuse or lack of outpatient mental health services continues, this study may assist health care administrators in understanding the requirement for additional outpatient mental health services in New Orleans in areas where race disparities exist because, African Americans had a higher average for screening for depression or anxiety.

Professional Practice

Although anxiety among residents of New Orleans were existent prior to Hurricane Katrina, ensuring continuum of healthcare delivery post Hurricane Katrina reduces the likelihood that non-hispanic blacks between the ages of 18 and 39 are disproportioned as it pertains to obtaining mental health care services. To improve care delivery, the Institute for Healthcare Improvement's triple aim framework was implemented. This framework consisted of improved population health, improved patients' experience and outcomes, and reduced cost of care proves that implementation of outpatient mental health services in areas with a higher percentage of anxiety diagnosis is critical. An implication for professional practice is to not look at the increase in anxiety rates in New Orleans from a wholistic perspective, but rather as a way for mental health professionals to assess utilization rates for outpatient care based on accessibility, health insurance coverage, and geographic placement within the city of New Orleans.

Positive Social Change

In 2012, a \$34 million budget cut from hospitals statewide in Louisiana largely affected outpatient treatment facilities in New Orleans. In addition, the closure of psychiatric facilities and the reduction of psychiatric physicians, nurses and technicians

continues as a problem across the state because of budget cuts and reductions in services. McGuire et al., (2018) said that social support moderated the association between trauma exposure and mental health outcomes. Therefore, the implication for social change is by ensuring funding is available to increase outpatient mental health service facilities in areas which contribute to improved mental health for non-hispanic blacks between the ages of 18 to 39.

The variables age and race are demographic in nature. However, my study added depth to further analyze sub-populations within New Orleans post-Hurricane Katrina which showed associations between race and anxiety and outpatient mental health services and age. The association between these variables shows an impact to certain populations within New Orleans which requires attention from health care administrators to resource solutions for delivering quality care for the affected population. Consequently, this effort would significantly reduce anxiety diagnosis for non-Hispanic blacks and increase outpatient mental health services accessibility and utilization for people between the ages of 18 and 39.

Conclusion

I identified associations between anxiety and race. I also identified associations between outpatient mental health services and age. Due to the limitations of the study, I would recommend using the same data set to a comparative analysis of pre and post-Hurricane Katrina using anxiety as the dependent variable with the same independent variables of outpatient mental health services, race, age and homelessness. Homelessness was not significant for any parametric tests; therefore, I would also recommend testing

for association between anxiety and homelessness to determine if homelessness predicts anxiety.

In sum, this study sought to address the gap in the literature regarding the relationship between anxiety and outpatient mental health services, while simultaneously addressing the gap in the literature regarding the association of outpatient mental health services and race, age and the homelessness based on natural disasters. The study concluded outpatient mental health services does not predict anxiety. It also concluded race does predict anxiety and an association does exist between age and outpatient mental health services. These relationships indicate disparities exist for non Hispanic blacks diagnosed with anxiety and adults between the ages of 18 and 39 are impacted by the lack of outpatient mental health services. As outpatient mental health service availability continues to decline, health care administrators can use the study results to leverage financial support from the state, focusing on building more outpatient mental health service facilities in areas with a high population of non-Hispanic blacks. Lastly, utilizing Andersen's behavioral model of health care use and Atkinson's SCT to understand how age affects the utilization of outpatient mental health services and how race is an indicator for anxiety diagnosis in New Orleans resident post-Hurricane Katrina.

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