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HEALTH CARE QUALITY AND HEALTH CARE ACCESS DISPARITIES AMONG RACIAL AND ETHNIC POPULATIONS WITH COMORBID MENTAL AND PHYSICAL HEALTH CONDITIONS

By

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DISSERTATION

Submitted in partial fulfillment of the requirements
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ABSTRACT

HEALTH CARE QUALITY AND HEALTH CARE ACCESS DISPARITIES AMONG RACIAL AND ETHNIC POPULATIONS WITH COMORBID MENTAL AND PHYSICAL HEALTH CONDITIONS

Amanda Lee Ryan, Ph.D, LMSW

The University of Texas at Arlington, 2023

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This study reports the individual and county-level factors associated with racial and ethnic disparities in the ED and inpatient utilization rates and discharge status for adult individuals with chronic mental illness (CMI) and comorbid medical conditions. Social determinants at the individual and county levels associated with rates of higher risk discharge statuses, and the extent to which these account for heterogeneity in acute care utilization and post-acute care plans were also assessed. Despite the significant literature in racial and ethnic disparities, and emergency department and inpatient admission utilization, there remains gaps in the literature regarding individuals with chronic mental illness and medical condition comorbidities. Inferential analysis was based on multilevel mixed-effects logistic regression models to estimate the odds ratios (OR) for each discharge outcome focusing in particular on differences across racial groups. Nine multilevel mixed-effects logistic regression models were specified to include a random intercept to account for random effects across counties. The random effects account for the between-county variation due to county-specific contextual effects. Five models were specified corresponding to the five outcomes of interest in the patient dataset and an additional four models were specified corresponding to the four outcomes of

interest in the outpatient dataset. Models controlled for the individual and county covariates listed above. This study found that the incidence of patients identified as Black, Asian or Pacific Islander, Other, or American Indian/Eskimo/Aleut had decreased odds of having high-risk discharges in outpatient settings. ED outcome results vary in significance and association. Inpatient utilization outcomes were similar in significance and association. The role of discharge planning in health care access and utilization is discussed further concentrating on high-risk discharges, challenges in discharge planning, disparities in discharge planning – including racial and ethnic disparities and eliminating health disparities among adults with comorbid mental and medical conditions is encompassed in Chapter 1. Chapter 2 then delves greater into disparities as well as the Gelberg-Andersen Behavioral Model for Vulnerable Populations. This chapter will provide an overview of historical individual and structural factors and consequences of these factors contributing to the disparities of this population. Chapter 3 describes the analytic methods used in this study, of the racial and ethnic disparities among the Texas ED and inpatient facilities. Study results are presented in Chapter 4 and Chapter 5 concludes with a discussion of findings and their implications for future research.

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DEDICATION

To my sisters, Joanna and Donna, and brother-in-law, Klaus – I am thankful for your support, encouragement, and love.

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CHAPTER 1: INTRODUCTION

Emergency Department and Inpatient Utilization

Hospital emergency departments (EDs) across the United States are a critical lifeline for persons to seek out medical care for a sudden or life-threatening injury or illness. Following an emergency department visit, many patients are admitted into hospital inpatient care, transition to outpatient health care facilities, or are discharged back into community-based settings. There is an increasing number of patients who present to the emergency department with symptoms associated with mental health illness combined with chronic medical conditions. This has been increasing at a faster rate than overall ED utilization (Opoku et al., 2017).

Patients with mental health conditions will often present to the ED multiple times a year, and many utilize the emergency department as their primary source of care (Lam et al., 2016). Individuals with comorbid chronic medical conditions, however, present in the ED for many other reasons including uninsurance, medication refills, transportation concerns, and lack of outpatient resources (Gabet et al., 2019). Racially and ethnically marginalized groups outnumber White adult persons in access to care issues. Nearly one-third of Hispanic (34%) persons, 24% of American Indian/Alaska Native persons, and two in ten Native Hawaiian/Other Pacific Islander persons (21%), Asian persons (19%), and Black persons (18%) reported not having a health care provider compared to White persons (16%) in 2021 (L. Hill et al., 2023). Racial and ethnic disparities in mental health services have clear indicators of access to care issues and racially and ethnically marginalized groups are less likely to receive mental health services. Over half of White adult persons (52%) with any mental illness received mental health services in 2021 (L. Hill et al., 2023). In comparison, only four in ten Black adults (39%), 36% of Hispanic adults, and about a quarter of Asian adults received mental health care in 2021 (L. Hill et al., 2023).

Poor discharge planning for individuals with comorbid chronic mental illness and chronic medical conditions can contribute to frequent presentation to the ED or inpatient readmission and are attributed to various provider, patient, family and socioeconomic factors and barriers (Xiao et al., 2019; X. Zhang et al., 2020). The facilitation of discharge planning is the process in which a discharge planner, most often alongside hospital staff and the provider, develop a plan that provides a transition to improve patient outcomes after and ED visit or inpatient stay (Gonçalves-Bradley et al., 2022; Shepperd et al., 2013). During the discharge planning process, patients and families are presented with options for discharge such as discharging to home or discharging to outpatient rehabilitation (Kane, 2011). The process of discharge planning can be complex for many reasons including mental and physical capacity of an individual, an individual's support system, an individual's willingness to participate in outpatient follow-up, culture, insurance status, level of care needed, transportation, age, and the availability of personal and outpatient resources (Werner et al., 2019).

While there are processes in place for discharge from the emergency department and inpatient admission, there remain significant challenges in transitioning to outpatient care effectively. Some of these challenges for individuals diagnosed with comorbid mental illness and medical conditions include continuity of care factors such as difficulty in accessing information, lack of involvement in decision making, medication complications, poor access, complicated dual diagnosis, and lack of providers for outpatient follow-up (Dombagolla et al., 2019; Storm et al., 2019). These challenges can result in poor health outcomes, particularly for vulnerable populations such as racially and ethnically marginalized groups diagnosed with chronic comorbid mental illness and medical conditions (Pinelli et al., 2017). High-risk discharges remain a concern not only for patients but also, caregivers, providers, and health care entities.

Discharge interventions and outcomes are a critical factor to not only an individual's continued well-being but also the ongoing issues plaguing the health care system (Kripalani et al., 2014).

Discharge planning is also an area where disparities have been seen during the process and after discharge. Socioeconomic variables, race and ethnicity, and payment source are significant factors in discharge predictions (Budnick et al., 2017; Cuthbert et al., 2011). Historically, Black persons face less desirable discharge dispositions and greater mortality, Hispanic and Black persons with medical conditions such as traumatic brain injury (TBI) in access to inpatient rehabilitation services, and disparities in insurance leading to poor discharge outcomes among racially and ethnically marginalized groups have become common occurrences in discharges (Asemota et al., 2013; Hagan et al., 2022; Meagher et al., 2015; Muhlestein et al., 2017; Onukwugha & Mullins, 2007; Sacks et al., 2011).

Though racial and ethnic disparities have been documented extensively for individuals with only medical conditions and only chronic mental illness, there are limited studies looking at this problem in adults with comorbid mental illness and medical conditions. Consequently, literature on racially and ethnically marginalized groups with comorbid mental illness and chronic medical conditions is scant. To address this gap in knowledge, this study uses the Gelberg-Andersen Behavioral Model for Vulnerable Populations (Gelberg et al., 2000a; Stein et al., 2007) as a guiding tool to develop a multifaceted understanding of racial and ethnic health disparities in ED and inpatient health utilization outcomes.

This study focuses on discharge disparities for individuals of racially and ethnically marginalized groups. The research question that will be answered in this study is: What are the odds of poor post-discharge health outcomes among different racial and ethnic populations with comorbid mental illness and chronic medical conditions, controlling for individual and county-

level social determinants? The outcomes specific to this study include: 1) discharging to court or law enforcement; 2) leaving against medical advice; 3) discharge to short-term facility; 4) discharge to home or home-care; and 5) discharge to psychiatric facility. The first chapter focuses on emergency department and inpatient use for various groups, including: 1) individuals with chronic mental health illness, 2) individuals with chronic medical conditions, and 3) individuals with comorbid chronic mental and medical conditions. Each of these factors are introduced separately for each group to clarify how these vary for different populations. The role of discharge planning in health care access and utilization are discussed further concentrating on high-risk discharges, challenges in discharge planning, disparities in discharge planning – including racial and ethnic disparities and eliminating health disparities among adults with comorbid mental and medical conditions. Chapter 2 then delves greater into disparities as well as the Gelberg-Andersen Behavioral Model for Vulnerable Populations. This chapter will provide an overview of historical individual and structural factors and consequences of these factors contributing to the disparities of this population. Chapter 3 provides a description of the analytic methods used in this study, of the racial and ethnic disparities among the Texas ED and inpatient facilities. Study results are presented in Chapter 4 and Chapter 5 concludes with a discussion of findings and their implications for future research.

Adults with Chronic Medical Conditions

About 40% of adults in the United States, an estimated 17 million individuals, have one or more chronic health conditions, and one in four adults have two or more chronic medical conditions (*Chronic Care Management and Connected Care | CMS*, n.d.; *CDC VitalSigns - Access to Health Care*, 2020). Chronic health conditions are conditions lasting for one or more years and which require medical treatment and/or limit activities of daily living (ADLs) (*About*

Chronic Diseases | CDC, 2022). These conditions contribute to poor functioning, frailty and disability, increasing the risk for death, and they are a major driver of health care expenditures in the United States (*About Chronic Diseases | CDC*, 2022). A few of the most prevalent chronic conditions among adults in the United States are heart disease, cancer, and diabetes with one in three deaths from heart disease, 1.7 million people diagnosed with cancer each year, and 37.3 million Americans living with diabetes (*About Chronic Diseases | CDC*, 2022). In 2021, about 6% of Texas adults had chronic obstructive pulmonary disease (COPD) or another chronic respiratory disease, 11.5% of Texas adults have had diabetes, 5.2% have heart disease, 3.1% have had a stroke, and 18.6% have been diagnosed with a depressive disorder (*Texas Health Data - Chronic Disease*, 2023).

Health Care Access. Many individuals with chronic health conditions experience poor health outcomes resulting from insufficient access or barriers to appropriate health care such as proximity of facilities and transportation (Carrillo et al., 2011). Access to health care is defined as having the use of personal health services to achieve overall best outcomes, and consists of four components including coverage, services, timeliness, and workforce *(Access to Healthcare and Disparities in Access | AHRQ*, 2021; Services & Millman, 1993). Not having health insurance or being underinsured has created considerable financial concerns for many individuals including medical debt due to the unaffordability of medical care (Hoffman & Paradise, 2008). Further, lacking health insurance decreases health care access observed in higher likelihood of delaying needed medical care and use of preventative care (Carrillo et al., 2011).

Poor access to health care is particularly problematic for individuals without transportation, who are low income, and who lack insurance (Carrillo et al., 2011). More than

40% of adults aged 18-64 years old diagnosed with hypertension, asthma, or diabetes skipped care due to lack of health insurance (*CDC Vital Signs - Access to Health Care*, 2020). For many individuals with chronic medical conditions, navigating the health care system has become a concern for this population due to nonfinancial and affordability barriers leading to unmet needs or delays in accessing care (Kullgren et al., 2012). Past research has concluded that in some communities people reporting poor access to community-based medical care for chronic medical diseases also experience higher rates of hospitalizations (Bindman et al., 1995) and emergency department utilization (Farcas et al., 2022).

ER and Inpatient Use. Patients with chronic conditions who do not have good health care experiences, such as perceived poor care by a provider, are at high risk of being readmitted back to inpatient care (Watson et al., 2022). Research has established that high readmission and hospitalization rates for individuals with chronic medical conditions, simultaneous with evidence of the excess use of hospitals, could improve if better care is established while inpatient or when discharged to home (Walraven et al., 2011; Watson et al., 2022). One study found that baseline ED and hospital utilization was high for individuals with multiple chronic conditions and no access to home based primary care, with 52.2% of the patients having more than one admission (Schamess et al., 2017). However, for individuals with chronic medical conditions that have access to home based primary care, significant decreases in ED and hospital utilization were observed (Schamess et al., 2017).

Adults with Chronic Mental Health Conditions

While there is evidence of high ED and inpatient utilization rates for patients with chronic medical conditions due to access to care issues, patients with chronic mental health conditions have comparable experiences for similar reasons. Mental health is described as a state

of well-being and realizing one's abilities, coping with normal stressors in everyday life, the ability to work, and make contributions to a community (Galderisi et al., 2015; *Mental Health | World Health Organization*, 2022). The Centers for Disease Control and Prevention (CDC) define mental health as our emotional, psychological, and social well-being which affects how we think, feel, and act, and determines how we handle stress, related to others, and make healthy choice (*About Mental Health | CDC*, 2023). According to the World Health Organization (WHO) in 2019, one in every eight people, or 970 million people in the world were living with a mental health disorder (*Mental Disorders | World Health Organization*, 2022). In Texas in 2021, 3.3 million adults had a mental health condition, which was three times the population of Austin, Texas (*Mental Health in Texas | NAMI*, 2021). Although there are effective treatment and prevention options, most individuals with mental health diagnoses do not have access to effective care (*Mental Disorders | World Health Organization*, 2022).

Health Care Access. Access to mental health care and receiving appropriate treatment, especially for depression, could greatly reduce the burdens of mental health (Graham et al., 2017). However, in 2021, nearly 839,000 adults in Texas did not receive the needed mental health care, with 45.3% of these individuals forgoing care due to cost (*Mental Health in Texas | NAMI*, 2021). Some communities in Texas, or a little over 15 million people, also lack adequate access to mental health professionals (*Mental Health in Texas | NAMI*, 2021). Researchers found that the psychiatrist workforce has been declining which has put the patient population with a mental illness diagnosis at great risk for poor outcomes, especially for individuals who are experiencing financial burdens and for less educated persons (Bishop et al., 2016). Further, it has been found that attitudinal barriers of individuals with a mental health diagnosis, including a lack of perceived need, play a significant role in not receiving care (Andrade et al., 2014).

ER and Inpatient Use. Individuals diagnosed with a mental health condition often receive care in the emergency department, in the absence of routine care (Peters et al., 2023). Between 2007 and 2016, about 8.3% of 100.9 million emergency department visits in the United States were for psychiatric or substance use-related diagnoses (Theriault et al., 2020). ED presentation has increased from 6.6% in 2007-2008 to 10.9% in 2015-2016 for individuals diagnosed with a mental health condition (Peters et al., 2023; Theriault et al., 2020). In 2019, mental health disorders were among the top ten most frequently occurring diagnoses among ED utilization (Peters et al., 2023).

Depression symptoms and having more than one mental health condition are important risk factors for ED attendance, with rates doubling when an individual had four severe mental health condition symptoms (Saini et al., 2020). In other mental health diagnoses, specifically for individuals diagnosed with anxiety/emotional disorders and depression, inadequate health literacy was significantly and independently associated with increased ED utilization (McLean et al., 2023). Previous hospitalization and more severe mental health diagnoses have been found to be associated with more ED visits in the following year (Niedzwiecki et al., 2018). Researchers have also identified several patient characteristics including individuals experiencing homelessness, individuals with a cocaine-positive screening, individuals with Medicare, individuals with a personality disorder, and hepatobiliary disease were associated with frequent emergency department use (Chang et al., 2014). Further, findings attributed poor knowledge of mental health resources and severe mental health symptoms with high ED utilization (Gesthika et al., 2021).

Many individuals seeking immediate mental health stabilization present to the emergency department and are admitted for short inpatient stays which has temporary better outcomes for

patients (Purushothaman, 2021). When examining the impact of comorbid personality disorder on inpatient and community-based service use amongst patients with severe mental illness, researchers found a greater proportion of these patients were high inpatient service users (Fok et al., 2014). Researchers have found that hospital stays were longer where there were fewer public mental health funds allocated to residential care, and that these longer stays were at psychiatric hospitals, at facilities with a greater proportion of patients diagnosed with a serious mental illness, and at facilities with a greater percentage of Medicare reimbursement (Lee et al., 2012). Further, length of stay for inpatient psychiatry patients are related to significant demographic characteristics such as gender, particularly for younger females who have longer stays (Oh et al., 2020).

Adults with Comorbid Mental Health and Medical Conditions

The intersection of comorbid mental and medical conditions is a complex and multifaceted problem in health care. Medical illness and medical condition comorbidities in adults are extremely common in the United States (Rosenfeld et al., 2022). 145 million people, almost half of all Americans, in 2009 had a chronic health condition and nearly 26% of adults had a diagnosable mental disorder (D. P. Chapman et al., 2005). Chronic conditions are sometimes coupled with mental illness in which an individual is diagnosed with comorbid conditions.

Though defined differently in different contexts, generally comorbidity is considered to be having one or more distinct diagnosed condition, though the nature of the health condition, the chronology of the conditions, relative importance of the conditions, vary across contexts. (Valderas et al., 2009). Mental disorders are often associated with one or more chronic physical diseases (Daré et al., 2019). Several studies (Al-Hayek et al., 2012; Danna et al., 2016; Nakash et

al., 2014; M. W. B. Zhang et al., 2011) have reported on the association between mental disorders such as depression, anxiety, schizophrenia and bipolar disorders, and chronic physical diseases such as cancer, heart disease, stroke, diabetes, obesity and chronic obstructive pulmonary disease (COPD) revealing very heterogeneous and complex relationships (Daré et al., 2019).

Some of the most common mental and developing medical comorbidities include diagnoses of depression with diabetes and depression with cardiovascular disease (Druss & Walker, 2011; Patten et al., 2008). In the United States, diabetes and depression are two of the most frequently diagnosed health conditions which often co-occur (Gonzalez et al., 2008; Hawkins et al., 2016). It is vital to not underestimate that the health of those with depression, as they have an increased risk for developing diabetes and cardiovascular disease and heightened risk for poor health outcomes after a cardiovascular event including a heart attack or stroke (Ahmed & Conway, 2020; Bradley & Rumsfeld, 2015; Roy & Lloyd, 2012). Individuals exhibiting poorer health management, lower quality of life, and increased diabetes-related complications are often diagnosed with depression and comorbid diabetes (Ciechanowski et al., 2003; Goldney et al., 2004; Hawkins et al., 2016). Hawkins et al. (2016) also asserts that persons experiencing poverty, specifically related to income in access to health care, place this population at high risk for mental health diagnoses including depression.

Daré et al., (2019) reported that persons with mental illness tend to develop more chronic diseases such as obesity and diabetes and found a high prevalence of diabetes and/or obesity in people experiencing schizophrenia or bipolar disorder (16.2%). Several other studies (Akena et al., 2015; Akyol et al., 2015; Daré et al., 2019; Kirkil et al., 2015; Maneeton et al., 2012; Peltzer & Pengpid, 2016; J. Zhang et al., 2008) have analyzed the prevalence of mental illness and

chronic diseases. The results of the meta-analysis by Solano et al. (2006) shows a prevalence of depression of between 13% and 79% in persons with chronic physical diseases including cancer, heart disease, renal disease, and COPD. Prevalence is often higher in hospitalized patients (Daré et al., 2019). In the Daré et al. (2019) study, researchers found pooled prevalence of 51% of depression and coronary heart disease in hospitalized patients and prevalence of 34.6 to 45.8% in non-hospitalized patients. In addition, Daré et al. (2019) meta-analysis discovered that the increased risk for anxiety and/or depression in persons experiencing chronic physical diseases was 310%. This is similar to another study in which individuals experiencing mental illness were more likely to be diagnosed with heart or cardiovascular disease, or diabetes (Ahmed & Conway, 2020).

Health Care Access. Initiation of treatment, for either a mental health condition, a physical health condition, or for both co-occurring conditions, is associated with positive outcomes (Lê Cook et al., 2011; Teh et al., 2008). However, many patients and caregivers have found it difficult to access tertiary medical hospital services due to access confusion and complicated navigation associated with long waiting times (Cranwell et al., 2016). There is an established bidirectional relationship between mental health and medical outcomes which results in high levels of comorbidity for these conditions (Ahmed & Conway, 2020). The addition of managing a comorbid mental illness along with chronic health conditions, compromises an individual's ability for self-care, contributes to more severe illness and limited functioning, and increases the number of health care services needed to manage these conditions (Lê Cook et al., 2011; Vogeli et al., 2007). Mortality rates are higher at younger ages among individuals with comorbid mental health and chronic health conditions and patients with coexisting depression and acute myocardial infarction suffer from higher mortality and a portion of this excess

mortality may be due to poor quality of care coupled with their mental illness diagnoses (Druss et al., 2000; Petersen et al., 2003).

Researchers found there is a significant and positive association for patients with multiple chronic conditions (MCC), chronic obstructive pulmonary disease (COPD), renal disease, and a mental health diagnosis and data have shown that poor adherence to treatment, worse outcomes, and increased mortality among patients are risks related to mental illness and chronic disease comorbidities (Abernathy et al., 2016). The addition of certain barriers such as homelessness, have made the treatment of comorbid mental illness and medical conditions more complex due to cost and lack of access to care (Arnold et al., 2020). Having better and more enhanced transitions to follow-up care along with better patient and provider engagement is essential (Cranwell et al., 2016). Further, individuals have long commented on the need for improved clinician attitudes as a barrier to transition to care (Cranwell et al., 2016).

ER and Inpatient Use. There is a high prevalence of individuals presenting to the emergency department with substance abuse diagnoses and comorbid mental and medical comorbid diseases frequently due to the exacerbation of diseases (Brennan et al., 2014). Frequent users of the Veterans Affairs emergency department are characterized by traits of individuals that have a higher need level for psychosocial and medical supports (Doran et al., 2013). Researchers also found there was a higher number of ED visits within a year associated with a number of major chronic conditions and lower levels of both mental and medical health-related quality of life along with other factors such as uninsurance and persons of color (Cobb et al., 2023).

Recently, researchers found that mental comorbidity in patients with high levels of physical multimorbidity, had a large effect on length of stay when admitted inpatient (Stahl-Toyota et al., 2023). The relationship between comorbid psychiatric diagnoses and medical

conditions are risk factors that can be linked to hospital readmission after an inpatient hospital admission (Šprah et al., 2017). Hospitalized persons with comorbid medical and mental illness conditions have longer length of stays and have been described by nursing staff as 'difficult' and struggle in caring for these patients (Zolnierek, 2009). Comorbid mental and medical conditions, such as heart failure, appear in a significant amount of hospitalized older adults and clinically risky inpatient rehospitalizations as well as, incurring higher economic costs (Sayers et al., 2007). Veterans diagnosed with substance use disorders and comorbid psychiatric related diagnoses have been found to have longer inpatient hospitals stays and more frequent hospitalizations (Walker et al., 2006). Likewise, researchers found that patients diagnosed with comorbid mental and medical, and specifically with somatization, had twice the outpatient and inpatient medical care utilization (Barsky et al., 2005).

The Role of Discharge Planning in Health Care Access and Utilization

Having access to outpatient care such as home-based primary care is a key factor in preventing ED utilization and inpatient readmissions (Kripalani et al., 2014). After an ED visit or inpatient stay, this is an outcome often facilitated by discharge planning. Discharge planning is the development of a plan that aims to contain costs and improve patient outcomes for a patient prior to leaving the hospital (Gonçalves-Bradley et al., 2022; Shepperd et al., 2013). During discharge planning, options for individuals could include: a) short-term facility or skilled nursing facility (SNF); b) long-term care (LTC) hospital; c) inpatient rehabilitation for physical or occupational therapy; d) outpatient rehabilitation; e) hospice care; f) home health care; g) assisted living; h) home with primary care follow-up; and i) psychiatric inpatient or outpatient care (Kane, 2011). Discharge planning is a complex process for hospitalized individuals, and it often relates to how long an individual stays in the hospital; poorly executed planning often leads

to shorter length of stays resulting in greater readmissions (Hunt-O'Connor et al., 2021). Much of the readmissions seen in ED and hospital utilization are avoidable and preventable (Walraven et al., 2011) through high quality discharge planning and optimal transitions in care from inpatient to less restrictive levels of care (Bajorek & McElroy, 2020).

High Risk Discharges. Researchers measuring heart failure patients and early rehospitalizations after being discharged from the hospital to a short-term or skilled nursing facility (SNF) found that many patients were readmitted to the hospital within 30 days (Weerahandi et al., 2019). Researchers also reviewed hospital discharges to home with home health care versus discharging to skilled nursing facilities, higher rates of readmissions were observed within 30 days for Medicare beneficiaries who discharged to home with home health care (Werner et al., 2019). It has also been documented that patients leaving against medical advice is not only associated with excess morbidity, mortality, and hospital readmissions but is also a public health concern and burden on the health-care system (Fiscella et al., 2007; Olufajo et al., 2016; Southern et al., 2012; Spooner et al., 2020). Further, researchers reviewed past research about post-acute care for individuals diagnosed with a stroke favors inpatient rehabilitation settings versus discharging to a short-term or skilled nursing facility due to the higher level of care and better outcomes (Alcusky et al., 2018). As seen in the past literature about individuals with chronic medical conditions the complexity of this diagnosis with discharge planning, access to health care, and patient outcomes is only one layer of intricacies related to a comorbid diagnosis in tandem with a chronic mental illness diagnosis.

With the complex nature and unmet needs, discharge planning may be especially critical for patients presenting to the ED with mental health conditions. The "revolving door" term has been used to describe persons experiencing mental illness and the repeated use of the emergency

department and hospital utilization due to chaotic, stressful, and lack of thoughtfully planned discharges in previous hospital and ED utilization (Tyler et al., 2019). In a couple of instances researchers found a decline in inpatient psychiatric beds but an increase in the number of patients with mental health emergencies—leaving ED physicians to treat these patients and then discharge them from the ED (Santillanes et al., 2020). From 1991 to 2015, there was a reduction in inpatient psychiatric beds globally, which led to less optimal treatment by emergency departments followed by hasty, poorly planned discharges (Sisti et al., 2018). These discharges are especially high risk because the specialty treatment needed is not provided, discharge planning is inadequate, and it often fails to include connection to appropriate community-based resources and outpatient follow-up (Navas et al., 2022; Sisti et al., 2018).

Comorbid mental illnesses and medical conditions are associated with decreased physical impairment and quality of life, and high mortality (Jimenez et al., 2017) which makes this population vulnerable after discharge. The population diagnosed with comorbid mental and medical conditions, in tandem with their social and medical complexity and vulnerability, require specific interventions designed to connect frequent psychiatric ED users with resources and outpatient resources to better manage their care which could improve overall health outcomes and reduce the overuse of emergency care (Brennan et al., 2014). This population require substantial discharge planning to help in the guidance and utilization of outpatient resources and care, and improve their quality of life (Carusone et al., 2017; Gowda et al., 2019).

The evolution of depression in patients with diabetes is often persistent and severe (Campayo et al., 2011; Hawkins et al., 2016), making them a particularly high risk population. Hawkins et al. (2016) describes the deleterious effects of these comorbidities including the high rates of comorbid depression being reported in patients with diabetes, often producing treatment

barriers. Despite successful treatment outcomes for this population, over half will experience a relapse in their depression, often leading to a more marked depression (Egede, 2005; Hawkins et al., 2016) placing them at high risk upon discharge. The presence of depressive symptoms are stalwartly associated with noncompliance to diabetes self-care (Gonzalez et al., 2008; Hawkins et al., 2016) which leads to the possibility of readmission after discharge. Further, patients leaving against medical advice are more often homeless and have comorbid mental and medical conditions, leading to a higher likelihood of readmissions and mortality (M. Choi et al., 2011).

Challenges in Discharge Planning for Patients with Mental Health Concerns. Upon discharge from inpatient settings, challenges related to continuity of care in the community for patients with medical and mental health concerns include patients' difficulty accessing information about supportive resources, lack of involvement in decision making, daily medication complications, poor access to services, and the lack of continuity of psychiatric staff (Storm et al., 2019). Some of these challenges can be mitigated, however, with adequate discharge planning. For individuals diagnosed with mental health conditions, the process of discharge planning should be led by at least one or more individuals from the mental health care team and should include: a) comprehensive needs assessment; b) collaborative, patient-centered care; c) resource availability management; d) care coordination; e) discharge planner role; and f) a discharge plan (Xiao et al., 2019). There is also some indication that family members and caregivers should be involved for continuity of care (Xiao et al., 2019).

Common barriers that persist in implementing a comprehensive discharge include denial from inpatient psychiatric units resulting in boarding, or keeping patients for a prolonged period of time in the emergency department (Kraft et al., 2021). Other barriers related to poor discharge planning and outcomes for individuals diagnosed with mental health conditions include limited

space and time, and overcrowding in the ED, ED staff barriers including lack of knowledge and education regarding psychiatric illness, negative attitudes of patient diagnosed with a mental health conditions, and complicated dual diagnoses (Dombagolla et al., 2019).

Effective discharge planning for individuals with complex medical and mental conditions has its challenges and often medical staff and patients are faced with a multitude of barriers. Barriers that were encountered during the discharge planning phase hospitals across the world included wait times for a bed, financial and insurance issues, communication issues between medical staff and patients, unclear discharge plans, medication clarity, transportation issues, and other personal and social factors including perceived provider bias and cultural preferences (Pinelli et al., 2017; Wong et al., 2011). In most cases, this leads to higher 30-day readmission rates (14.7% of over 7.7 million hospital stays in 2016) (Mills et al., 2020)– in which most are preventable, which has implications on quality of care and cost (Kripalani et al., 2014; Siow et al., 2019).

Racial and Ethnic Disparities in Comorbid Conditions, Health Care Access, and Discharge Planning

Ahmed & Conway (2020) indicate that racially and ethnically marginalized groups are more likely to have comorbid mental health and medical conditions. Specifically, racially and ethnically marginalized patients experience higher rates of psychological distress and diabetes, angina, and history of heart attack or stroke than White persons. Other racially and ethnically marginalized groups such as American Indian and Hispanic persons were more likely to have comorbid conditions, while Black persons were less likely to have psychological distress and angina in this study (Ahmed & Conway, 2020).

Historical and on-going discrimination – in addition to other contributing factors such as genetics, and health risk behaviors – may contribute to an increased risk of comorbid medical and mental health issues seen for some of the racially and ethnically marginalized groups (Ahmed & Conway, 2020). Psychological distress co-occurring with diabetes, stroke, and angina is more likely in Native American communities by an average of two to three times compared to White persons (Ahmed & Conway, 2020; Findling et al., 2019). Certain racial and ethnic groups have a greater prevalence of chronic conditions, as Black and Latino persons are consistently found to have an earlier onset of many comorbid conditions (Lê Cook et al., 2011).

Racial disparities are common not only in prevalence of multiple chronic conditions (MCC) but also in utilization of health services as studied among White persons, Black persons, and Hispanic persons (Gandhi et al., 2018). In one study, researchers noted that African American persons were most likely to visit EDs for diabetes mellitus (DM) and less likely to visit a primary care physician due to problems in access to care, and American Indian persons/Alaskan Native persons were least likely (Kim et al., 2012). In the emergency department visits, differences between Black persons and White persons widely varied by discharge plan, which may be due to more barriers in Black communities related to social determinants of health-related barriers to obtaining care, uncontrolled chronic conditions, decreased primary care availability, disparities in health literacy, distrust in primary care, and convenience in the ED (Brown et al., 2016; LaCalle & Rabin, 2010; Musa et al., 2009; Parekh et al., 2018).

Disparities in Discharge Planning. Past research has demonstrated socioeconomic variables, race and ethnicity, and payment source are significant factors in predicting a discharge back to an individual's home (Budnick et al., 2017; Cuthbert et al., 2011). In fact, Black persons

face less desirable discharge dispositions and greater mortality risk following stroke hospitalizations (Onukwugha & Mullins, 2007). Patients with traumatic injuries also face post-acute care inequalities in care due to being uninsured (Sacks et al., 2011). Racial disparities and insurance disparities have been identified for Hispanic and Black persons with traumatic brain injury (TBI) in access to inpatient rehabilitation services (Asemota et al., 2013; Meagher et al., 2015). Further, racial disparities in discharge disposition also exist for patients post-surgery (Muhlestein et al., 2017) and uninsured patients needing post-acute rehabilitation are less likely to be discharged (Hagan et al., 2022). These occurrences of disparities are prevalent in discharge planning and vary across health care settings.

Poor discharge planning is attributed to various provider, patient, family, and socioeconomic factors. One factor that has been observed in mental health care discharge planning is poor communication between the medical team and discharge planner and the patient and family members, which is caused by differing cultural beliefs and interpersonal conflicts (Xiao et al., 2019). More specifically, discharge planners should consider cultural and linguistic factors and barriers to resources, such as transportation, to assist in accessibility and better health outcomes (Mills et al., 2020). Racial bias among providers and nurses has been found in the ED assessment, using the emergency severity index (ESI) and in decision-making (X. Zhang et al., 2020)—presenting another barrier in discharge planning. Subsequently, it is vital to assess all social determinants to minimize inadequate discharge planning (Hudson, 2021).

Ample research demonstrates racial and ethnic disparities in discharge planning for populations with a wide range of clinical conditions (Asemota et al., 2013; Budnick et al., 2017; Cuthbert et al., 2011; Hagan et al., 2022; Meagher et al., 2015; Muhlestein et al., 2017; Onukwugha & Mullins, 2007; Sacks et al., 2011). However, this problem has rarely been

examined for individuals with mental health needs or individuals with comorbid conditions. Because discharge planning plays a critical role in health care outcomes--and because racial and ethnic disparities in health care outcomes for adults with chronic medical and mental health conditions have been extensively documented--examining such disparities in discharge planning processes may point to areas for intervention to reduce such disparities.

Eliminating Health Disparities for Adults with Comorbid Medical and Mental Health Conditions

The Office of Disease Prevention and Health Promotion (ODPHP) implemented Healthy People, a national initiative which includes 10-year objectives for improving the health of all Americans. One of the overarching goals of Healthy People 2010 and 2020, has been to eliminate health care disparities (Cook et al., 2017a, 2017b; *Healthy People 2020: An End of Decade Snapshot: CDC*, 2021). To ensure health care equity among the population, eliminating disparities will require a commitment from the public, elected officials, and insurance companies (Fiscella & Sanders, 2016).

ED and inpatient use among individuals with comorbid mental illness and medical conditions has been described in this chapter. It further explores racial and ethnic disparities in health care access and discharge planning which are crucial to eliminate. To support this mission to eliminate disparities, better understanding of these disparities—and specifically the drivers of disparities in health care access and utilization for adults with co-occurring chronic medical and mental health conditions—is needed. To begin this process, in the next chapter I distinguish between health and health care disparities and report on the broad and deep research that describes sources of racial and ethnic health care disparities for individuals with chronic medical conditions, mental health conditions, and comorbid medical and mental health conditions. To

organize the numerous factors that have been demonstrated to contribute to these disparities, I use the Gelberg-Anderson Behavioral Model for Vulnerable Populations Framework.

CHAPTER 2: LITERATURE REVIEW

Definition of Racial and Ethnic Disparities and Health Status and Disparities

Past disparities definitions have evolved and developed in research over time. Since the early 1970's, health status has been measured as the output of health care systems (Karimi & Brazier, 2016). The World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity" (World Health Organization, 2014). The term *health disparities*, or health inequalities, describes the differences in health and raises concerns about equity due to social disadvantage which contributes to worse health outcomes among socially disadvantaged groups (Braveman, 2010). Social disadvantage influences health through factors such as familial history of wealth and educational attainment, neighborhood influences, and social policies that impact these conditions (Braveman, 2010). *Health disparity* is a metric to measure progress toward health equity and is defined as the differences that exist between racially and ethnically marginalized groups in the incidence, prevalence, mortality, and burden of disease that reveal social inequalities in health and health outcomes (Cook et al., 2019; Fiscella & Sanders, 2016; *Health Disparities | DASH | CDC*, 2023).

Health care disparities are conceptually distinct from health disparities and are described as the differences in health care quality, access, and outcomes that adversely affect racially and ethnically marginalized groups and socially disadvantaged populations (Fiscella & Sanders, 2016; *Healthcare Disparities and Cultural Competency Consensus Standards | National Quality Forum*, 2012). This definition refers to differences in health care access and quality not due to patient needs or preferences or clinical suitability (Cook et al., 2019). The Institute of Medicine's definition of health care disparities considers differences in health care access and quality

regardless of differences in socioeconomic status (SES) including income, health insurance status, education background, geographical status, and other individual characteristics not related to a person's health (Nelson, 2003). The IOM asserts that all individuals, regardless of SES, have the right to equal access to health care for which health systems should be accountable; thus, attributing racial or ethnic disparities to differences in SES, or controlling away these differences, fails to fully capture the size and scope of health care disparities (Cook et al., 2012). The IOM's report, *Unequal Treatment*, concluded that there are a number of sources that contribute to disparities in health care, however, there is some evidence suggesting that bias, prejudice, and stereotyping by health care providers also contribute to health care differences (Nelson, 2003). The IOM proposes that differences in the rates of health care use between racially and ethnically marginalized groups and Whites is shaped by three sets of factors: (1) clinical appropriateness and need, and patient preferences; (2) the operation of health care systems, and legal and regulatory climate; and (3) discrimination (Alrwisan & Eworuke, 2016). This conceptualization of disparities in medical care encompasses racial inequities in societal foundations (Williams, 2000).

Though there are significant racial and ethnic disparities in health status for adults with comorbid medical and mental health conditions (Cook et al., 2019; Fiscella & Sanders, 2016), this study focuses on health care disparities among this population—specifically in ED and Inpatient utilization and discharge planning. Poor outcomes are a reflection of inability to access high quality care for medical or mental health conditions due to structural barriers including health service approachability, acceptability, availability and accommodation, affordability, and appropriateness (Schwarz et al., 2022). Additionally, individual barriers including ability to perceive, ability to seek, ability to reach, ability to pay, and ability to engage are factors that

influence poor outcomes due to the inability to access care (Schwarz et al., 2022). Multiple dimensions of social disadvantage influence health care utilization, such as family support, employment, the failure of health care systems to respond to the needs of socially disadvantaged patients and racially and ethnically marginalized patients, implicit provider bias, and geographic location (Bell et al., 2008; Blair et al., 2013; Braveman et al., 2011; Cooper et al., 2012; DeNavas-Walt & Proctor, n.d.; Dovidio & Fiske, 2012; Fiscella & Sanders, 2016; Friel & Marmot, 2011; Samuel et al., 2014; Zallman et al., 2010). These factors that contribute to health care disparities have been unorganized in a variety of frameworks, including The NIMHD Minority Health and Health Disparities Framework (*NIMHD Research Framework Details*, 2018) and The NIA Health Disparities Framework (Hill et al., 2015). However, these frameworks fail to take into account the specific vulnerabilities unique to populations with mental health needs and how they interact with each barrier to health care. For this reason, the Gelberg-Andersen Behavioral Model for Vulnerable Populations (Gelberg et al., 2000a; Stein et al., 2007), which organizes these components into predisposing, enabling, and need factors, may be the most useful for understanding predictors of health care disparities (Gelberg et al., 2000a).

The Gelberg-Andersen Behavioral Model for Vulnerable Populations

The Gelberg-Andersen Behavioral Model for Vulnerable Populations is the most recent extended version of the Anderson Behavioral Model (Stein et al., 2007). The original Behavioral Model was developed to assist in understanding predictors of health services use (Gelberg et al., 2000a). This model suggested that people's need for care, factors that enable or impede health services, and a predisposition by people to use health services are all influences (Andersen, 1968; Gelberg et al., 2000a).

There have been three phases since Andersen's (1968) original model, to reach the current version of this theoretical framework. Due to the minimal effectiveness of the first model, and advancements made in identifying how those vulnerable populations were affected by the three dimensions of factors in their health service utilization, this model was revised and expanded (Victor et al., 2018). This first model from the late 1960's has since been revised and updated with Phase 2 developing in the 1970's (Adorno et al., 2013; Aday & Awe, 1997). This phase included elaboration of health services use specific to certain conditions and illness, and consumer satisfaction (Gelberg et al, 2000). Phase 3 followed shortly after in the 1990's, incorporating the changes made in personal practices and the improvement of health status focusing on delivery of health services and explicit outcomes of the consumer (Gelberg et al., 2000a). The outcomes that have influenced predisposition, enabling resources, need, and health behaviors are explicit to the dynamic nature of the Behavioral Model (Gelberg et al., 2000a).

The revised Behavioral Model for Vulnerable Populations expanded to make it a theoretical framework for understanding service utilization for populations with complex social or medical needs (Victor et al., 2018). This framework builds on Andersen's original Behavioral Model of Health Service Use which intended to describe social factors related to the utilization of health and behavioral health services (Victor et al., 2018). The Andersen Behavioral Model (Anderson, 1968) has been widely used to explain relationships among the three factors – predisposing, enabling , and need – to explain health services utilization in the general population (Stein et al., 2007).

The Gelberg-Andersen Behavioral Model for Vulnerable Populations explains the use of health services coupled with realms relevant to understanding the health and health-seeking behavior of vulnerable populations (Gelberg et al., 2000a). Predisposing vulnerable factors

include demographic factors like age, gender, criminal justice system involvement, religiosity, sexual orientation, and victimization (Victor et al., 2018). Enabling factors include income, access to services and providers, as well as social support. Need factors include health conditions such as mental health problems and comorbid health conditions however these have negatively impacted vulnerable individuals. All three of these factors likely have an impact on vulnerable populations (see **Appendix A**).

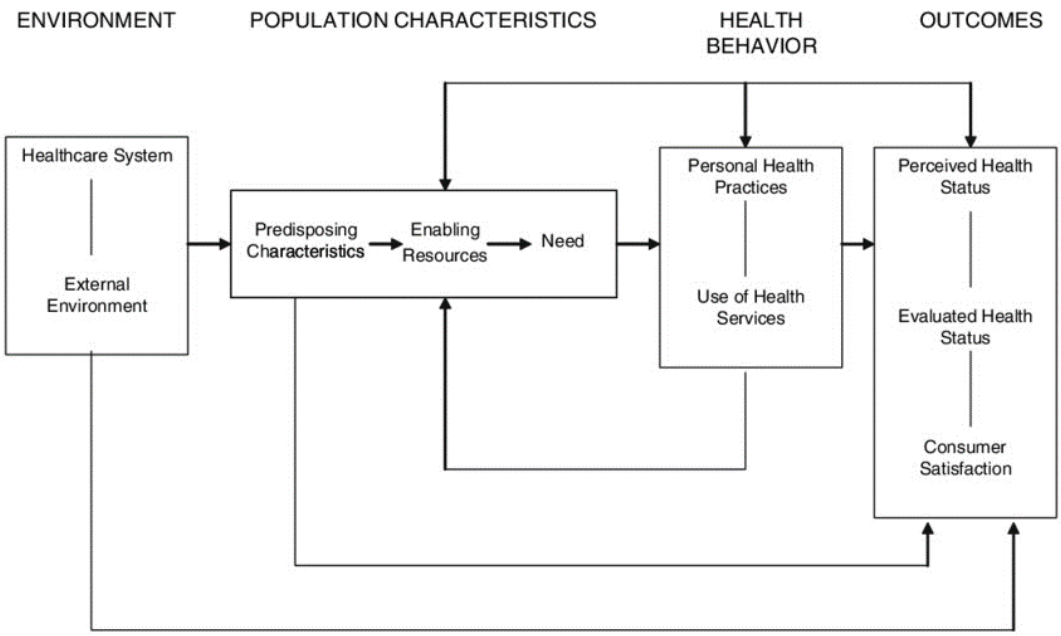

Figure 1: Andersen's behavioral model of health service use. Adapted from: Andersen (1995).

Structural factors

External Environment. There are existing structural inequalities in neighborhoods and health care systems which lead to racially and ethnically marginalized groups' likely difficulty in accessing care and more likely to experience inequities in quality care (Ahmed & Conway, 2020; Alegría et al., 2008). Discrimination can have a community-level impact by influencing the availability of many of the basic needs of humans including housing options, food insecurity, and

access to health services, all of which are shown to be associated with adverse health outcomes (Ahmed & Conway, 2020; Knapp & Hall, 2018; Kolak et al., 2020).

Limited availability of culturally competent mental health providers (Delphin-Rittmon et al., 2015; Hawkins et al., 2016) is also cited as an environmental factor impacting health care access. Provider bias is also a deterrent, especially for African American persons seeking mental health services (Chaves et al., 2019; Hawkins et al., 2016). Provider bias stems from the implicit bias about another person based on race and ethnicity, gender, or other characteristics, which shapes the behavior of the physician in medical care (Chapman et al., 2013). Language barriers are a characteristic that shapes and impacts quality of care and the relationship between provider and patient (Al Shamsi et al., 2020) and because oral communication is the main vehicle for the dissemination of mental health information and medical care information, clinicians' accommodations for language interpreters or other ways to communicate effectively with their patients can be key in creating successful outcomes in post-acute care.

Additionally, the organization of health care services can create barriers to accessing care –including the need for referrals, insurance preauthorization, and the timing with which services are available (N. G. Choi & Gonzalez, 2005; Pass et al., 2019; J. M. Smith et al., 2021). In fact, adults who had received a follow-up appointment made by discharge planners in the hospital were significantly more likely to follow-up compared to individuals who did not have a scheduled follow-up appointment made during discharge planning due to lack of community providers, patient refusal, and strain of resources (T. E. Smith et al., 2020). As a result, many individuals navigating the health care system, especially older adults in need of long-term services and supports (LTSS), rely on the education and knowledge from providers and family members, to assist in the process (Travers et al., 2020).

Individual level factors

Predisposing Factors. Predisposing factors include characteristics such as age, education, race, and ethnicity, that exist prior to perception of illness (Stein et al., 2007). Studies (Diamant et al., 2004; Whaley, 2001) have shown that people of color are less likely to seek care for their mental illness symptoms due to past negative experiences (Ahmed & Conway, 2020). Racially and ethnically marginalized persons may hold mistrust for the medical system or may have experienced racism in their encounters with providers (Maina et al., 2018). This distrust may stem from not only personal experiences, but a long history of structural racism and abuse in medicine.

History, dating back to the 1800's, reveals that African American women who were enslaved endured discriminatory and cruel treatment. They were subjected to non-consensual human experimentation during the development of Dr. J Marion Sims' gynecological surgical procedures (Ojanuga, 1993). The Tuskegee Study of untreated syphilis in Alabama from 1932-1972 was a study on unknowing African-American males, in which researchers did not inform participants about their disease and did not treat them after introducing penicillin (Park, 2017). Another key historical display of racism and nativism (*America's Forgotten History of Forced Sterilization – Berkeley Political Review*, 2020) is the American eugenics movement dating back to the late 1800's. This movement forced sterilization to "breed out" undesirable traits in women experiencing poverty, women with disabilities, and women of color (*America's Forgotten History of Forced Sterilization – Berkeley Political Review*, 2020). Although, these are only a few studies which detail the unjust and discriminatory practices in the medical field, these remain a historical legacy impacting ongoing health care experiences for racially and ethnically marginalized groups.

Compared to non-Hispanic White persons, there are also cultural differences in perceived need, recognizing health problems, and the value placed on health care among racially and ethnically marginalized groups which may help to account for service use variances (Alegria et al., 2012; Hawkins et al., 2016). More prevalent among Black persons, compared to White persons, are the negative beliefs regarding treatment and Watkins and colleagues (2015) explain that Black persons are more likely to prefer non-pharmacologic approaches such as counseling and prayer, do not believe in the effectiveness of medications, and are more likely to believe in the addictive nature of antidepressants (Givens et al., 2007). Watkins et al. (2015) explain this suggests that progression of a major depressive disorder (MDD) may be more severe and have long-lasting effects within and across racially and ethnically marginalized groups. There are additional reports that African American persons are limited in accessing effective mental health treatment due to fear of receiving an inaccurate mental health diagnosis in primary care (Simning et al., 2011; Snowden, 2001).

Enabling Factors. Enabling factors include characteristics such as insurance status, income, housing status, transportation, and regular source of care (Stein et al., 2007). Cultural and structural barriers to treatment remain a key factor in the underutilization of mental health care and regular source of care (Andrade et al., 2014; Coombs et al., 2021). Hispanic American persons experience numerous barriers to seeking care and completing a treatment program, including language and cultural barriers, and immigration status (Singleton & Krause, 2021).

Housing is another enabling factor that has been associated with health and mental health service use. About 40% of persons experiencing homelessness and persons detained are African American persons, and these characteristics, in tandem with the lack of health insurance and less effective mental health treatments, suggest that African American persons are at greater risk for

mental health care disparities (Alegria et al., 2012; Simning et al., 2011; Snowden, 2001). It is vitally important to be reminded that public housing residents are one such group that may be especially vulnerable to health care inequalities and in the United States, as this federal program houses 2.4 million people of which 69% are racially and ethnically marginalized groups (Simning et al., 2011; US Department of Housing and Urban Development, 2009, 2021). There is limited evidence suggesting that public housing residents suffer more from mental illness than non-public housing residents, due to their difficulty in accessing quality and affordable care along with negative variables including higher alcohol consumption and violence (Malmgren et al., 1996; Simning et al., 2011). Environmental disparities including, segregation, lack of housing mobility, and homelessness, related to housing among racially and ethnically marginalized groups adversely affect health outcomes (Jacobs, 2011). An added variable for public housing residents is that those in public housing may be particularly disadvantaged due to limited resources and many already suffer from health care inequalities because of their race/ethnicity (Simning et al., 2011).

Low socioeconomic status, including insurance status, has long been linked to racial and ethnic disparities according to much of the literature (Chetty et al., 2016; Stepanikova & Oates, 2017; Tipirneni et al., 2021). Insurance coverage enables access to health care –which can be costly when paid for out of pocket. However, this is less representative of Black persons and Latino persons due in part to the persistently higher uninsured rates among Black persons (19% in 2012) and especially Hispanic persons (29%), compared with White persons (11%) (Cook et al., 2017; DeNavas-Walt & Proctor, 2015.). Cost related barriers to care are indicated in foregoing care among racially and ethnically marginalized groups more than the effects of health insurance (Stepanikova & Oates, 2017).

Need Factors. Need factor is related to illness and perceived need for health care by an individual seeking care (Stein et al., 2007). Historically, stress resulting from discrimination is shown to have a direct impact on physical and mental health, increasing need for health care in marginalized populations. Researchers have theorized that individuals exposed to chronic stressors such as discrimination stress are more likely to engage in the most accessible coping strategies and poor health behaviors, including smoking, drinking, drug use, and overeating (Ahmed & Conway, 2020; Carter et al., 2017; Suvarna et al., 2020). These coping strategies are maladaptive to an individual's health and may lead to increased rates of chronic diseases (Ahmed & Conway, 2020; Boateng-Poku et al., 2020; Jackson et al., 2010). For racially and ethnically marginalized populations, there is a link to poor health outcomes due to stress arising from discrimination which may play a role in terms of the physiological response to chronic stress (Ahmed & Conway, 2020; Carter et al., 2017; Gee et al., 2007; Williams, 2018).

The probability of having a usual source of care among elderly adults is likely associated with their level of perceived need and desire for services (Coombs et al., 2021). Level of perceived need for care is also linked to individuals seeking or using specialty care such as, mental health care, and ER care (Gabet et al., 2019; Hajek et al., 2021; Lindamer et al., 2012; Stein et al., 2007). Researchers have demonstrated that there are strong associations between higher needs and higher health care usage among individuals with chronic conditions and perceived low self-rated health (Hajek et al., 2018, 2021; Stein et al., 2007). This is also true for individuals in need of mental health service and substance use services which have consistent high utilization of service findings (Lindamer et al., 2012). Furthermore, needs factors are strongly associated with emergency department use (Gabet et al., 2019; Lindamer et al., 2012).

Consequences

The role of discharge planning from the ED and from inpatient is one of the most important decisions for a patient's disposition and has a significant effect on their outcomes (Calder et al., 2012; Xiao et al., 2019). Post-acute care is significantly important for better patient outcomes and has been defined in various ways including a series of services to facilitate a patient's return back to the community, such as medical treatment, nursing care, rehabilitation, and residential care, that is provided to stabilized patients following acute hospitalization (Wang et al., 2019). Discharge options include: a) short-term facility or skilled nursing facility; b) long-term care (LTC) hospital; c) inpatient rehabilitation for physical or occupational therapy; d) outpatient rehabilitation; e) home health care; f) assisted living; and g) psychiatric inpatient or outpatient care (Kane, 2011). These discharge outcomes could have positive outcomes for patients, unless poorly executed such as an early discharge, no support system, or taking into account socioeconomic factors, leading to readmissions (Hunt-O'Connor et al., 2021).

Racial and ethnic disparities have been noted, however, in adequacy of discharge planning and post-acute care, contributing to ongoing health and health care disparities. African American and Hispanic persons diagnosed with post-traumatic brain injury not only have worse functional outcomes and community integration but are also less likely to receive treatment compared to White persons, making them at risk for poorer outcomes (Gary et al., 2009). There are significant differences in post-acute care transitions, especially to skilled nursing facilities, for racially and ethnically marginalized older adults diagnosed with Alzheimer's disease or related dementia (Temkin-Greener et al., 2023). Many times, poor discharge planning can lead to poor outcomes. Black persons, poststroke, who achieved less functional improvement compared to White persons, while inpatient were more likely to be discharged home and following three

months post discharge, Asian-American persons had less improvement, compared to White persons (Bhandari et al., 2005).

Poorer outcomes that stem from poor discharge planning and inappropriate post-acute care contribute to racial and ethnic disparities in health outcomes; From 1999-2018, racial and ethnic differences among adults improved in some subgroups, but largely persisted in self-reported health status, access, and affordability (Mahajan et al., 2021). Mortality rates for Black elderly persons are more than twice as high compared to White persons (Anderson et al., 2004). As described, due to long standing and deeply entrenched biases and discrimination a person's race and ethnicity remains an important factor in shaping life chances and longevity for health including access to curative and health care technologies, access to post follow-up care, and access to pharmacological care (Masters et al., 2014), especially post discharge.

The economic burden of racial and ethnic health disparities was estimated to be $421 billion in 2018 (LaVeist et al., 2023). The economic burden of health disparities in the U.S. was attributable to Black persons' poor health and remains unacceptably high (LaVeist et al., 2023). Much of the other racially and ethnically marginalized populations share in this economic burden (LaVeist et al., 2023). The cost burden is not only on health care facilities, but also time management, staffing, medical supplies, court costs, and preventable hospitalizations could be enhanced by improving quality and containing costs, engaging key state and federal officials in health initiatives for minorities, and maintaining and tracking evolution in reducing disparities (Hanlon & Hinkle, 2011).

Between 2003 and 2006, it is estimated that health inequalities among African American persons led to $135.9 billion in excess direct medical costs and Asian persons accounted for $11.4 billion (LaVeist et al., 2023). Between these years, indirect costs associated with illness

and premature death would have been reduced by more than one trillion dollars if health inequalities were eliminated (LaVeist et al., 2023). Two of these indirect costs on society, imposed by health disparities, include lower work productivity and losses from premature death (LaVeist et al., 2023).

Research Gaps

While there is an excess of literature discussing post-acute care for a wide variety of medical conditions and interventions, there is a lack of literature specifically addressing disparities in post-acute care for racially and ethnically marginalized populations with comorbid mental and medical health conditions. It is estimated that there are 43.4 million adults in the United States with any mental illness (Schroeder & Peterson, 2018). Research suggests that there is a bidirectional relationship between mental health and comorbid medical conditions (Ahmed & Conway, 2020). However, there is evidence that people with comorbid conditions have worse outcomes than individuals with only one condition (Valderas et al., 2009). Poorer outcomes lead to potentially avoidable admissions and readmissions to ED and inpatient settings. Potentially avoidable admissions are admissions for conditions that could be managed through appropriate care outside the hospital. However, for individuals who have a mental health diagnosis self-management in community settings may be particularly challenging (Woodhead et al., 2021). For this reason, older adults with comorbid conditions are more likely to readmit to the ED than individuals in younger age groups (Besga et al., 2015) and mortality rates are rising for this population (Gaieski et al., 2017; Masters et al., 2014).

Though racial and ethnic disparities have been widely documented in post-acute care for stroke, trauma, and brain injury patients, it has not been well-documented for racially and ethnically marginalized populations diagnosed with comorbid mental and medical conditions.

Studies examining these other conditions demonstrate the roles that race, underinsurance or uninsurance, and having a comorbid condition, play as predictors of ED and hospital readmission rates. However, the intersection of these characteristics and post-acute care are not well-examined. Discharging admitted patients with a self-reported low readiness to manage their care may make them more vulnerable to more risks from early discharge and issues that can delay recovery (Siow et al., 2019) including readmission, lack of support, or mortality. Attention to disparities in post-acute care for populations with both chronic medical and mental health conditions is vital to address the readmission rates, cost burden to individuals, and burden to the health care system, and more research is needed.

Current Study

This dissertation aims to estimate the size and scope in disparities in hospitals in the state of Texas, and post-acute care among racially and ethnically marginalized groups further controlling for additional risk factors. This study will answer the research question: What are the odds of poor post-discharge health outcomes among different racial and ethnic populations with comorbid mental illness and chronic medical conditions, controlling for individual and county-level social determinants? The outcomes specific to this study include: 1) discharging to court or law enforcement; 2) leaving against medical advice; 3) discharge to short-term facility; 4) discharge to home or home-care; and 5) discharge to psychiatric facility. These outcomes will allow a more intimate look at the state of Texas discharge data and the existing disparities. Recognizing and comparing racial and ethnic disparities that exist in ED and inpatient discharge planning, and identifying the magnitude of disparities for different social groups lays the groundwork for the development of interventions that will reduce these disparities (Hawkins et al., 2016).

CHAPTER 3: METHODS

Methods

The goal of this project is to identify the magnitude of racial and ethnic disparities in ED and inpatient utilization and higher risk discharges among adults with comorbid chronic mental health and health conditions in Texas in 2019, and to identify individual and structural factors that contribute to rates of high-risk discharges. Only Texas data was utilized for this study because of the growing racially and ethnically marginalized population and because Texas leads in most individuals who are uninsured (Chaves et al., 2019; Chen et al., 2019). Estimating the size of these disparities across the state provides a baseline against which to measure statewide progress in the coming years.

Secondary data analysis was completed using the 2019 statewide sample of inpatient and outpatient Texas Hospital Emergency Department Public Use Data Files (THEDPUD) to describe heterogeneity in rates of ED and inpatient care utilization in Texas. This data was analyzed using mixed effects logistic regression to assess the racial and ethnic disparities in ED and inpatient discharge status for individuals with chronic mental illness (CMI) and comorbid medical conditions. County/Regional level social determinants associated with rates of ED and Inpatient discharge status were also assessed.

Data Sources

This study used the *Texas Health and Human Services and Texas Department of State Health Services, Center for Health Statistics Texas Health Care Information Collection (THCIC) Texas Emergency Department Public Use Data Files*, including year specific data from all four quarters in 2019. The Texas Emergency Department Public Use Data files include Inpatient and Outpatient Public Use Data Files (PUDF). Patient race and ethnicity are required by law and rule

to be submitted for each patient and generally, these data are not collected by the facilities directly from the patient but may be subjectively captured and reported by the facilities (*Texas Hospital Emergency Department Data Set*, 2019). The data contained in the Inpatient files include patient-level information for individuals admitted for care, lasting several hours, days, weeks, or years, whereas the Outpatient PUDF includes patient-level information in which outpatient services are provided within a 24-hour timeframe. Data was collected from hospital emergency departments and ambulatory care centers (ASC) only if a patient received services.

Specific ED PUDF files that were used for this study included the Inpatient (IP) Base Data #1 File and Outpatient (OP) Base Data File. Both files contain data such as diagnoses, race, ethnicity, age, patient status, insurance status, discharge status, gender, patient county, condition codes, specialty unit codes, length of stay, admission type, and illness severity. For this study, because record identifiers were based on service encounters rather than unique patient identifiers, the inpatient and outpatient data sets were analyzed separately due to the inability to merge them. Because all data are publicly available and fully de-identified, this study was exempt as Human Subjects Research.

County level data used in this study was drawn from the *County Health Rankings and Roadmaps (CHRR)* data (*Texas | County Health Rankings & Roadmaps*, 2019). CHRR is a program that provides data and information to postulate awareness of the factors that influence individual and community health to community leaders by ranking counties by collected and analyzed evidence. One of the goals for CHRR is to improve health and increase health equity for the community regardless of race, ethnicity, gender, location, income, or other factors using the data as reported. 2019-year specific Texas state level data was utilized in this study. The data

includes county-level estimates of health outcomes, health factors, health behaviors, clinical care, social & economic factors, and physical environment.

Analytic Sample Preparation

The descriptive analysis examines characteristics of adult hospital patients to compare among several distinct groups including individuals of racial and marginalized groups. This study used the *International Classification of Diseases, 10th Revision, Clinical Classifications Software (CCS) for ICD-10-PCS from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP)* to assign ICD-10 codes to the diagnoses in the THEDPUD files. Binary variables were created to indicate the presence of some of the most prevalent diagnostic categories associated with adult mental and medical comorbidities (Goldman et al., 2020; Gulley et al., 2011). The following diagnoses were identified and used to create a binary medical condition variable [0 = No (Did not have medical condition); 1 = Yes (has medical condition)]: Diabetes, Hypertension, kidney disease, Chronic Heart Disease, and Asthma. In addition, the following diagnoses were identified and used to create a binary mental health condition variable: Schizophrenia, Depression, Bipolar, Mood Disorders, Anxiety, Trauma, Conduct Disorder, Suicidal Ideation, and Other Mental and Behavioral Disorders.

An observation was coded with one of the above-mentioned conditions if the diagnosis appeared in any position in the diagnosis list. From these variables, a new binary variable was created for each individual encounter to represent the presence of a comorbid condition. The analytic sample included all observations with a comorbid condition, ages 18 and above. All other observations were dropped from the dataset for analysis. If there were any observations in which a patient had a surgical procedure, these were excluded from both the inpatient and outpatient data sets in order to focus solely on the question of discharge in the context of

comorbidity diagnoses. For the final analytic sample, Outpatient observations totaled 366,749 and Inpatient observations totaled 221,395.

Variables

Each variable in this study is listed in **Appendix B** and described below. The variables chosen for this study were based on the predisposing, enabling, need factors from The Gelberg-Andersen Behavioral Model for Vulnerable Populations (Gelberg et al., 2000a). The predictor variables contain characteristics of predisposing factors, and the covariates contain characteristics of predictor and enabling variables. Finally, the need factor is defined as the comorbid variable in which the sample of each dataset were representative of the comorbid mental and medical condition. The assessed impact of the predisposing, enabling, and need factors are utilized in this study to predict outcomes in the emergency department and inpatient.

Predictor (Independent) Variable

The predictor variables for this study are a patient's race and ethnicity.

Race. This is a nominal variable which includes 1) American Indian/Eskimo/Aleut, 2) Asian or Pacific Islander, 3) Black, 4) White, and 5) Other. Due to the rarity of some of the race categories in the case of the "Discharge or Transfer to Court or Law Enforcement" outcome., race was recoded as (1) Black and (2) Other; with (0) White as the reference group.

Ethnicity. This is a binary variable which includes (0) Hispanic Origin and (1) Not of Hispanic Origin.

Outcome Variables

Outcome variables for descriptive and inferential analysis included five patient discharge reasons in the case of the inpatient dataset – 1) *Discharge to Home/Self-Care*, 2) *Discharge or Transfer to Short-Term Facility*, 3) *Left Against Medical Advice*, 4) *Discharge to Court/Law*

Enforcement, and 5) *Transfer to Psychiatric Facility* (Inpatient Only) – and four discharge reasons for the outpatient dataset – 1) *Discharge to Home/Self-Care*, 2) *Discharge or Transfer to Short-Term Facility*, 3) *Left Against Medical Advice*, and 4) *Discharge to Court/Law Enforcement*. Transfer to psychiatric facility was removed from the ED discharge outcomes as there were too many missing variables and the distribution of the data was highly skewed.

Discharge to Home/Self-Care. This variable was coded as a binary variable – 0) not discharged to home/self-care and 1) discharged to home/self-care.

Discharge or Transfer to Short-Term Facility. This variable was coded as a binary variable – 0) not discharged or transferred to short-term facility and 1) discharged or transferred to short-term facility.

Left Against Medical Advice. This variable was coded as a binary variable – 0) did not leave against medical advice and 1) left against medical advice.

Discharge to Court/Law Enforcement. This variable was coded as a binary variable – 0) not discharged to court/law enforcement and 1) discharge to court/law enforcement.

Transfer to Psychiatric Facility. (Inpatient Only) This variable was coded as a binary variable – 0) not transferred to psychiatric facility and 1) transferred to psychiatric facility.

Covariates

Covariates were comprised of individual-level characteristics including age, insurance status, gender, homeless status, and substance use/abuse status.

Age. This is a binary variable which was coded into the following: 0) 18-44 yrs. old and 1) 44+ yrs. old. Any individuals younger than 18 yrs of age were excluded from the sample based on adult sample for this study.

Insurance Status. This is coded as a categorical variable to include: 0) Private Only (reference), 1) Public Only, 2) Dual Insurance, and 3) Uninsured. The dual insurance category was created based on whether the individual had both private and public insurance.

Gender. This is a binary variable which includes 0) Female and 1) Male. The reference group was Female.

Homeless (Outpatient Only). This is a binary variable which includes 0) not experiencing homelessness and 1) experiencing homelessness.

Substance Use/Abuse. This is binary variable which includes 0) no substance use/abuse and 1) substance use/abuse.

County Covariates. County-level covariates were drawn from County Health Rankings and Roadmaps including transportation data in relation to area hospitals and transportation options in different regions of Texas. These covariates are listed in **Table 1**.

Table 1: CHRR Covariates Measures and Descriptions

Measure	Description
Mental Health Providers	Ratio of population to mental health providers
Violent Crime	# of reported violent crime offenses per 100,000 population
Severe Housing Problems	% of households with overcrowding, high housing costs, or lack of kitchen of plumbing facilities
Long Commute	% commuting > 30 minutes for workers
Overcrowding	% of households with overcrowding only
Inadequate Facilities	% of households with lack of kitchen or plumbing

Analysis

Descriptive analysis was used to describe the distribution of race, ethnicity, gender, age, insurance type, substance use/abuse, and discharge status proportions in both the inpatient and outpatient datasets. Inferential analysis was based on multilevel mixed-effects logistic regression

models to estimate the odds ratios (OR) for each discharge outcome focusing in particular on differences across racial groups. Nine multilevel mixed-effects logistic regression models were specified to include a random intercept to account for random effects across counties. The random effects account for the between-county variation due to county-specific contextual effects. Five models were specified corresponding to the five outcomes of interest in the patient dataset and an additional four models were specified corresponding to the four outcomes of interest in the outpatient dataset. Models controlled for the individual and county covariates listed above. Listwise deletion was utilized, which removed any missing data. All outcome variables were set as categorical binary. Analysis was conducted in Stata V.17 SE.

CHAPTER 4: RESULTS

Sample Characteristics

Sample characteristics for all variables utilized in this study are presented in **Table 2** (Outpatient) and **Table 3** (Inpatient). These descriptives provide an overview of the heterogeneity in adult populations with comorbid mental health and medical conditions using ED and inpatient care in Texas in 2019.

Outpatient

68% of the outpatient sample with a mental health and physical health comorbidity were white (reference group). The remaining race categories were Black (19.9%), Other (10.8%), Asian or Pacific Islander (1%), and American Indian/Eskimo/Aleut (0.2%). Three-quarters of the outpatient sample were non-Hispanic (77.6%). About 64% were female (reference group) and 59% were over 45. A plurality of the sample was uninsured (39%) while 33% relied solely on public insurance such as Medicare and Medicaid. About 9% of the outpatient sample indicated substance use/abuse. A large majority of the outpatient sample were discharged to home/self-care (88%) while 8.5% were discharged/transferred to a short-term facility. Small proportions of the sample left against medical advice (2.4%) or were discharged to court/law enforcement (0.2%).

Table 2 Emergency Department (ED) Descriptives

	Freq.	Percent	Cum.
Race			
White	249,812	68.12	68.12
Black	72,791	19.85	87.96
Asian or Pacific Islander	3,531	0.96	88.93
Other	39,722	10.83	99.76
American Indian/Eskimo/Aleut	893	0.24	100

Ethnicity			
Non-Hispanic	284,342	77.55	77.55
Hispanic	82,283	22.44	100
Gender			
Female	213,926	64.27	64.27
Male	103,964	31.23	95.5
Missing	14,971	4.5	100
Insurance			
Private Only	72,172	19.68	19.68
Public Only	119,757	32.65	52.33
Dual Insurance	33,823	9.22	61.55
Uninsured	141,008	38.45	100

Age			
18-44 Yrs Old	110,743	41.34	41.34
45+ Yrs Old	157,141	58.66	100
Homeless			
Not Experiencing Homelessness	366,501	99.93	99.93
Experiencing Homelessness	267	0.07	100
Substance Use/Abuse			
No Substance Use/Abuse Diagnosis	335,389	91.44	91.44
Diagnosed with Substance Use/Abuse	31,379	8.56	100
Discharge to Home/Self-Care			
No	43,444	11.85	11.85
Yes	323,324	88.15	100
Discharge or Transfer to Short-Term Facility			
No	80,819	22.04	22.04
Yes	285,949	77.96	100
Left Against Medical Advice			
No	358,124	97.64	97.64
Yes	8,644	2.36	100
Discharge to Court/Law Enforcement			
No	366,155	99.83	99.83
Yes	613	0.17	100

Inpatient

Nearly three-quarters of the inpatient sample with a mental health and physical health comorbidity were white (74.9%). The remaining race categories were Black (14.8%), Other (9.1%), Asian or Pacific Islander (1.1%), and American Indian/Eskimo/Aleut (0.8%). Nearly 81% of the inpatient ethnicity sample were non-Hispanic and nearly 62% were female. Most individuals were under 45 (68%) unlike the outpatient sample. Only 19.8% of the inpatient sample indicated substance use/abuse. More than half of the sample were discharged to home/self-care (56.7%) while 23.6% were discharged/transferred to a short-term facility. Of the remaining three inpatient discharge outcomes, only 1.7% were transferred to a psychiatric facility, 2.6% left against medical advice, and 0.31% were discharge to a court/law enforcement.

Table 2: Inpatient Descriptives

	Freq.	Percent	Cum.
Race			
White	165,729	74.86	74.86
Black	32,704	14.77	89.63
Asian or Pacific Islander	2,383	1.08	90.7
Other	20,200	9.12	99.83
American Indian/Eskimo/Aleut	379	0.17	100
Ethnicity			
Non-Hispanic	179,040	80.97	80.97
Hispanic	42,060	19.02	99.99
Insurance			
Private Only	37,676	17.01	17.01
Public Only	78,682	35.53	52.54
Dual Insurance	42,588	19.23	71.77
Uninsured	62,534	28.23	100
Gender			
Female	109,704	61.6	61.6
Male	60,186	33.79	95.39
Missing	8,214	4.61	100
Age Recode			
18-44 Years Old	73,092	68.1	68.1

45+ Years Old	34,239	31.9	100
Substance Use/Abuse			
No Substance Use/Abuse Diagnosis	177,746	80.24	80.24
Diagnosed with Substance Use/Abuse	43,766	19.76	100
Transfer to Psychiatric Facility			
No	217,685	98.27	98.27
Yes	3,827	1.73	100
Discharge to Home/Self-Care			
No	95,831	43.26	43.26
Yes	125,681	56.74	100
Left Against Medical Advice			
No	215,804	97.42	97.42
Yes	5,708	2.58	100
Discharge or Transfer to Short-Term Facility			
No	169,278	76.42	76.42
Yes	52,234	23.58	100
Discharge to Court/Law Enforcement			
No	220,822	99.69	99.69
Yes	690	0.31	100

*Missing values for Gender

** $p < 0.05$

Tables 4-7 reports the estimated odds ratios, p-values, and the 95% confidence intervals for the four outpatient outcomes. The odds ratio estimates show the factor change to the odds of each outcome for a unit change in an independent variable, holding all other variables constant. The p-value measures the statistical significance ($p < 0.05$) of the finding and the confidence interval (CI) is an estimate of the range within which one would expect the true odds ratio to lie **(Appendix C-F)**

Discharge to Court or Law Enforcement - Outpatient

Compared to White persons, the odds of being discharged to court or law enforcement are lower for Black persons [OR = 0.58, CI = 0.39, 0.86], and also for Asians or Pacific Islanders [OR = 0.35, CI = 0.05, 2.70]. Compared to non-Hispanic persons, the odds of being discharged to a court/law enforcement are lower for Hispanic persons [OR = 0.56, CI = 0.38, 0.83]. The odds of being discharged to a court/law enforcement are higher for those over 44 years old [OR = 1.61, CI = 1.19, 2.18], and are also higher for males compared to females [OR = 1.38, CI = 1.05, 1.83]. Compared to those with private insurance, the odds of being discharged to court or law enforcement are higher for those with only public insurance [OR = 2.28, CI = 1.50, 3.46] as well as persons who are uninsured [OR = 1.76, CI = 1.16, 2.67]. None of the county-level factors were significant predictors of being discharged to a court or law enforcement **(Appendix C)**.

Discharge or Transfer to Short-Term Facility

Compared to White persons the odds of discharging or transferring to a short-term facility were lower for Asian or Pacific Islander persons [OR = 0.37, CI = 0.33, 0.35] and persons of multiple races (Other) [OR = 0.24, CI = 0.20, 0.28] but were higher for American Indian/Eskimo/Aleut [OR = 1.11, CI = 1.10, 1.13]. Compared to non-Hispanic persons, the odds of discharging or transferring to a short-term facility is higher for Hispanic persons [OR = 1.06, CI = 1.03, 1.08]. The odds are also lower for males compared to females [OR= 0.79, CI = 0.78, 0.81] and higher for those categorized as persons experiencing homelessness [OR = 0.30, CI = 0.17, 0.53]. Compared to persons with private insurance, the odds of discharging or transferring to a short-term facility are lower for persons with public insurance, persons with dual insurance, and persons who are uninsured. The odds are lower for persons indicating substance use/abuse [OR = 0.55, CI = 0.49, 0.62]. None of the county-level predictors were significantly associated

with discharging or transferring to a short-term facility. Also, age was not significantly associated with discharging or transferring to a short-term facility **(Appendix D)**.

Discharge to Home/Self-Care

Compared to White persons, the odds of discharging to home/self-care are slightly higher for Blacks [OR = 1.06, CI = 1.02, 1.11] and persons of multiple races (Other) [OR = 1.07, CI = 1.01, 1.14]. Compared to non-Hispanic persons, the odds of discharging to home/self-care are higher for Hispanic persons [OR = 1.37, CI = 1.30, 1.44]. The odds of discharging to home/self-care are lower for persons over 44 years old [OR = 0.91, CI = 0.88, 0.94]. The odds of discharging to home/self-care are lower for males compared to females [OR = 0.60, CI = 0.58, 0.62] and lower for persons experiencing homelessness [OR = 0.20, CI = 0.13, 0.31]. Compared to persons with private insurance, the odds of discharging to home/self-care are lower for persons with public insurance only [OR = 0.50, CI = 0.48, 0.53], dual insurance [OR = 0.57, CI = 0.51, 0.64], and persons who are uninsured [OR = 0.69, CI = 0.66, 0.73]. The odds of discharging to home/self-care are lower for persons with a substance use/abuse diagnosis [OR = 0.34, CI = 0.29, 0.39]. In counties with severe housing problems, the odds of being discharged to home or self-care are slightly higher [OR = 1.04, CI = 1.01, 1.07] **(Appendix E)**.

Left Against Medical Advice (AMA)

Compared to White persons, the odds of leaving against medical advice are lower for Black persons [OR = 0.86, CI = 0.80, 0.93] and persons of multiple races (Other) [OR = 0.77, CI = 0.69, 0.86]. The odds of leaving against medical advice are lower for Hispanic persons [OR = 0.77, CI = 0.70, 0.83] and are also lower for persons over 44 years old [OR = 0.84, CI = 0.79, 0.89], but higher for males [OR = 1.47, CI = 1.39-1.56] compared to females. Compared to persons with private insurance, the odds of leaving against medical advice are higher for persons

with public insurance only [OR = 2.11, CI = 1.93, 2.30], persons with dual insurance [OR = 1.59, CI = 1.29, 1.96], and persons who are uninsured [OR = 1.75, CI = 1.60, 1.91]. The odds are higher for leaving against medical advice for persons with a substance use/abuse diagnosis [OR = 1.612, CI = 1.216-2.136]. No county-level factors were significant predictors of leaving against medical advice. There was no change in the odds for those experiencing homelessness compared to those not experiencing homelessness **(Appendix F)**.

Tables 8-12 reports the estimated odds ratios, p-values, and the 95% confidence intervals for five inpatient outcomes **(Appendix G-K)**.

Discharge to Court or Law Enforcement - Inpatient

Compared to White persons, the odds of discharging to court or law enforcement are higher for Black persons [OR = 3.38, CI = 1.92, 5.94]. The odds are also higher for males [OR = 11.53, CI = 1.05, 1.83] compared to females. Compared to persons with private insurance, the odds of discharging to court or law enforcement are lower for persons with public insurance only [OR = 0.19, CI = 0.11, 0.35], persons with dual insurance [OR = 0.01, CI = 0.00, 0.09], and persons who are uninsured [OR = 0.15, CI = 0.08, 0.29]. The odds of discharging to court or law enforcement are lower in counties having inadequate facilities [OR = 0.19, CI = 0.06, 0.67]. Ethnicity and age were not associated with discharging to a court or law enforcement, nor was substance use/abuse **(Appendix G)**.

Discharge or Transfer to Short-Term Facility - Inpatient

Compared to non-Hispanic persons, the odds of discharging or transferring to a short-term facility are lower for Hispanic persons [OR = 0.76, CI = 0.72, 0.81]. The odds of discharging or transferring to a short-term facility are higher for persons older than 44 years old [OR = 1.09, CI = 1.05, 1.13]. The odds of discharging or transferring to a short-term facility are

also higher for males [OR= 1.095, CI = 1.055, 1.136] compared to females. Compared to persons with private insurance, the odds of discharging or transferring to a short-term facility are higher for persons with public insurance [OR = 2.24, CI = 2.06, 2.40], persons with dual insurance [OR = 1.54, CI = 1.42, 1.70], and persons who are uninsured [OR = 1.54, CI = 1.42, 1.70]. Race was not significantly associated with discharging or transferring to a short-term facility, nor was substance use/abuse diagnoses. No county-level variables were statistically associated with discharging or transferring to a short-term facility **(Appendix H)**.

Discharge to Home/Self-Care - Inpatient

Compared to non-Hispanic persons, the odds of discharging to home/self-care are higher for Hispanic persons [OR = 1.33, CI = 1.26, 1.40]. The odds of discharging to home/self-care are lower for persons over 44 years old [OR = 0.93, CI = 0.90, 0.96]. Compared to persons with private insurance, the odds of discharging to home/self-care are lower for persons with only public insurance [OR = 0.52, CI = 0.48, 0.55], persons with dual insurance [OR = 0.74, CI = 0.69, 0.80], and persons who are uninsured [OR = 0.66, CI = 0.61, 0.70]. The odds of discharging to home/self-care are lower for persons with a substance use/abuse diagnosis [OR = 0.62, CI = 0.55, 0.70]. Race was not significantly associated with discharging to home/self-care, nor was gender. No county-level variables associated with discharging to home/self-care **(Appendix I)**.

Left Against Medical Advice (AMA) - Inpatient

Compared to White persons, the odds of leaving against medical advice are higher for Black persons [OR = 1.37, CI = 1.10, 1.70]. The odds of leaving against medical advice are also higher for males [OR = 1.75, CI = 1.50, 2.04] compared to females. Compared to persons with private insurance, the odds of leaving against medical advice are lower for persons with only

public insurance [OR = 0.91, CI = 0.70, 1.17], persons with dual insurance [OR = 0.46, CI = 0.34, 0.62], and persons who are uninsured [OR = 0.93, CI = 0.71, 1.22]. The odds of leaving against medical advice are higher in counties with overcrowding [OR = 1.12, CI = 1.04, 1.21]. Ethnicity and age were not associated with leaving against medical advice, nor was substance use/abuse **(Appendix J)**.

Transfer to Psychiatric Facility – Inpatient Only

The odds of transferring to a psychiatric facility are higher for persons over 44 years old [OR = 1.49, CI = 1.28, 1.734]. Compared to persons with private insurance, the odds of transferring to a psychiatric facility are lower for individuals with only public insurance [OR = 0.45, CI = 0.37, 0.56], persons with dual insurance [OR = 0.26, CI = 0.21, 0.33], and persons who are uninsured [OR = 0.38, CI = 0.30, 0.48]. The odds of transferring to a psychiatric facility are higher for persons with a substance use/abuse diagnosis [OR = 4.78, CI = 3.69, 6.19]. Race and ethnicity were not associated with transferring to a psychiatric facility, nor was gender, nor any of the county level variables **(Appendix K)**.

CHAPTER 5: DISCUSSION

This study reports the individual and county-level factors associated with racial and ethnic disparities in the ED and inpatient utilization rates and discharge status for adult individuals with chronic mental illness (CMI) and comorbid medical conditions. Social determinants at the individual and county levels associated with rates of higher risk discharge statuses, and the extent to which these account for heterogeneity in acute care utilization and post-acute care plans were also assessed.

Findings from the Emergency Department and Inpatient

This study found that the incidence of patients identified as Black, Asian or Pacific Islander, Other, or American Indian/Eskimo/Aleut had decreased odds of having high-risk discharges in outpatient settings. ED outcome results vary in significance and association. Inpatient utilization outcomes were similar in significance and association.

Race and Ethnicity Predicts ED and Inpatient Discharge Status for Adults with Chronic Medical and Behavioral Comorbidity

For any of these four race categories, compared to their white counterparts, they are more likely to discharge home/self-care from the ED. This study also provides evidence that suggests that Hispanic populations with comorbid medical and mental health conditions are more likely to discharge to home/self-care from the ED. When discharging from inpatient to home/self-care, there was a significant association when Hispanic. Hispanics were also more likely to *only* discharge from inpatient to home/self-care in comparison to non-Hispanics. Black, Asian or Pacific Islander, Other, or American Indian/Eskimo/Aleut persons had a lower risk of discharging or transferring to a short-term facility from the ED. Individuals with “other” race or Hispanic ethnic identity are significantly more likely to discharge to a short-term facility.

Similarly, this study provides evidence that suggests that Hispanic populations with comorbid medical and mental health conditions are more likely to discharge or transfer to a short-term facility from the ED. Black, Asian or Pacific Islander, Other, or American Indian/Eskimo/Aleut persons had a lower risk of leaving against medical advice from the ED. There was a significant association when leaving against medical advice from inpatient and Black persons. Black, Asian or Pacific Islander, Other, or American Indian/Eskimo/Aleut persons had a lower risk of discharging to court or law enforcement from the ED. This study also found a significant association between the Black population and when discharging to court or law enforcement from inpatient.

Individual and County Factors Associated with ED and Inpatient Discharge Status for Adults with Chronic Medical and Behavioral Comorbidity

Enabling factors of the Gelberg Andersen Behavioral Model for Vulnerable Populations were associated with findings that provide evidence of fewer resources to cover basic needs and resources, insurance status, and poorer access to transportation increase risk of discharging to home/self-care. Because more individuals with CMI and medical comorbidities presented to the ED for care, the need factor is most prevalent in this study. The perceived need from physicians and patients as well as evaluation by the physician and an individual's perception of care are greatly connected. This, in the long run, for medical facilities also increases facility costs, care costs, and personnel costs. This study found significant associations between being 45+ years old, having public only insurance and being uninsured, and discharging to court or law enforcement from the ED. Likewise, when leaving against medical advice from the ED, there was a significant association when male, having public only insurance, dual insurance, or being uninsured, and having substance use/abuse.

This study found a significant association between being male and with county violent crime rate when discharging to court or law enforcement from inpatient. When discharging or transferring to a short-term facility from inpatient, there was a significant association being age 45+ years old, male, and having public only insurance, dual insurance, or being uninsured. As with ED outcomes, there is a strong connection between enabling and need factors, and inpatient utilization outcomes for individuals with CMI and medical comorbidities. There was a significant association when leaving against medical advice from inpatient and being male, and overcrowding. When transferring to a psychiatric facility from inpatient, there was a significant association when age 45+ years old and having substance use/abuse.

The findings in my research adds to the current literature for racial and ethnic disparities, inpatient utilization outcomes and ED outcomes, and contributing factors and social determinants for individuals with chronic mental illness and medical condition comorbidities. Although, my questions were answered from this study, building upon this research, future studies include readmission status for repeat ED users associated with this population as well as, policy level incorporation analyzing how current policy in the state of Texas effect inpatient utilization and discharge status. Future exploration of how the role bias and stigma by providers and individuals seeking health care may play in the inpatient utilization and discharge status for this population will also further clarify access to care and quality of care. Implications for policy and practice in relation to my study include the expansion of Medicaid in Texas for better access to health care and better health equity, improved policies and procedures in Texas Hospitals and ERs, as well as the improvement in collaboration with providers and the community for improved discharge outcomes for vulnerable populations. To keep health care costs down on an already burdened

system, accountability in discharge planning and considering each individual's case and personal circumstances could attribute to less risky discharges and better equity in access to care.

Contextualizing Study Results

Other work has demonstrated notable racial and ethnic disparities in discharge planning and outcomes for a wide range of clinical conditions and inpatient interventions (Flanagan et al., 2017; Mahajan et al., 2021; Singh et al., 2019; Williams et al., 2016; X. Zhang et al., 2020). This study is among the first to provide evidence about the size and scope of racial and ethnic disparities discharge status for a population served in hospitals for a wide range of presenting problems and interventions. It also provides foundational work illustrating that these disparities exist for adults with both medical and mental health conditions. This is a population that has been understudied in the health care disparities literature; while disparities in health care quality, service use and outcomes have also been documented for adults with chronic health care conditions in a wide range of health care settings (Bindman et al., 1995; Carrillo et al., 2011; Farcas et al., 2022; Hoffman & Paradise, 2008; Kullgren et al., 2012), and similar disparities have been documented for adults with chronic mental health conditions (Andrade et al., 2014; Bishop et al., 2016; Gesthika et al., 2021; Graham et al., 2017; *Mental Health in Texas | NAMI*, 2021; Williams et al., 2016) – the intersection of both conditions has rarely been studied. Many studies point to problematic differences in outcomes and access to appropriate care for adults with mental illness and medical conditions (Hawkins et al., 2016; Jimenez et al., 2017; Santillanes et al., 2020; Sisti et al., 2018; Tyler et al., 2019; Xiao et al., 2019). However, despite the important role discharge planning plays in health outcomes and utilization (Mahajan et al., 2021), the role of race and ethnicity in discharge status and planning from hospital settings –both inpatient and ED visits—is rarely examined (Jones et al., 2023; Xiao et al., 2019).

Understanding disparities in these settings (ED and inpatient) are crucial because of the strain on resources in hospitals including staff, space, and funding (Navas et al., 2022; Ryan et al., 2021; Santillanes et al., 2020; Singer et al., 2011). Constraints on these resources contribute to boarding patients or longer ED wait times and longer delays for patients accessing inpatient beds. Individuals with mental illness take extended periods of time to process and assess in ER settings because of their complex care needs, challenges in processing information, and struggles with interpersonal interactions (Kraft et al., 2021; Ryan et al., 2021; Singer et al., 2011). This population of patients are also high risk discharges due to having less community-based support and may have fewer resources for adequate housing and food (Hudson, 2021; Kripalani et al., 2014).

For minority populations with chronic conditions, past research has proven that this population is more likely to be readmitted within 30 days of discharge, when compared to the white population, due to poorer quality post-discharge care (Mozaffarian et al., 2015). Understanding the scope of disparities in less safe discharge statuses for ED and Inpatient patients with comorbid conditions, as well as risk factors that contribute to less safe, higher risk discharges, can contribute to our understanding of the policy, community, and organizational interventions or practice changes that can help to reduce these disparities – and related disparities in poor health status and outcomes. This may be particularly important for Hispanic populations, which disproportionately relay on hospitals for medical care. Latinos with major chronic conditions have high preventable hospitalization rates (Cobb et al., 2023) and nearly 24% of Hispanic adults presented to any emergency department in the United States in 2019 and receive routine health care in the ED (Parast et al., 2022). For this reason, discharge status and planning

may play a critical role in improving health and service outcomes for Hispanic adults with chronic medical and mental health conditions.

In the United States, older adults accounted for 156 million ED visits and hospital admissions increased rapidly from 2001 to 2009 (Pines et al., 2013) and inpatient admission from the EDs have increased by 50.4 % to 17.3 million in 2006 (Laudicella et al., 2018; Schuur & Venkatesh, 2012). Patients with comorbid mental and medical conditions have higher usage of the ED and Inpatient, making them some of the most expensive individuals to treat (Goldman et al., 2020). Thus, understanding factors that contribute to high-risk discharges for ED and inpatient populations with coexisting medical and mental health conditions may help to reduce risk of readmission and associated costs. In previous explorations, the researchers acknowledged that there are many socioeconomic factors that have a profound effect on discharge outcomes (Ladha et al., 2011). This study confirms and extends these findings by demonstrating individual risk factors associated with high-risk discharges, including being middle aged, male, not privately insured, and being diagnosed with a substance misuse disorder. It also contributes new evidence about community or county-level factors that may also influence discharge planning decisions, including county rates of over-crowded housing and crime.

Current Research

Emergency Departments have become a “health care” safety net for many uninsured or low-income Americans and estimates suggests that 11% of all outpatient visits and 28% of all acute care visits are influenced by discharge planning (Farcas et al., 2022; Thomas-Hawkins et al., 2019). In the United States, among individuals presenting to the ED, the odds of being treated and released were five times that compared to the odds of being admitted (Thomas-Hawkins et al., 2019). EDs have historically and continue to serve as the first point of medical

contact and health care delivery for much of the vulnerable population (Farcas et al., 2022). Evidence continues to increase documenting the connection between Emergency department utilization and hospital admissions, and disparities among racial and ethnic populations (Chow et al., 2003).

Racial and ethnic disparities can be explained by many predisposing, enabling, and need factors including insurance coverage and poverty levels that mediate the relationship between race and ethnicity and access to care (Alegria et al., 2012). Though some ED and inpatient outcomes varied in this study, discharge outcomes were explained by insurance coverage and overcrowding, violent crime rate, and mental health provider availability. Non-Hispanic Blacks or African American individuals are twice as likely to visit the ED to receive routine health care due to not having a primary care provider (Doty & Holmgren, 2006; Hong et al., 2007; Liu et al., 1999; Parast et al., 2022; Walls et al., 2002). This study had similar racial findings among individuals presenting to the emergency department. Mental health provider access and geographic/commute issues have also long been factors contributing to health care access and equity leading to long-term unmet mental health needs (Chow et al., 2003). However, mental health provider access and long commute times were not significant predictors of discharge status in this study.

Future Research

This study – which examines individuals of racial and ethnic backgrounds with mental illness and medical comorbidities – contributes to the existing research and knowledge by adding documentation of disparities in the comorbid population. It also is one of the first studies to document disparities in discharge statuses for individuals diagnosed with comorbid mental and medical conditions. However, a better understanding of the relationship between race and

ethnicity, and ED and inpatient outcomes would provide guidance to organizations and social workers about structural and practice levers which may help to reduce these disparities. Because racial and ethnic disparities, and the social determinants that surround them, have a broader effect on individual health outcomes as well as overall health care organizational and public costs, greater understanding of structural drivers of these inequities is needed. Using multivariate and mediation analysis to assess relationships between ER and inpatient outcomes, and individual and community level health status outcomes and health system outcomes would provide additional understanding and knowledge about the pathways between hospital discharges and health disparities (Cobb et al., 2023).

Further, this study did not measure predictors of disparities, it merely assesses the nature and size of disparities. Future research, in which the disparities themselves are quantified and employed as outcome variables, will allow for greater clarity about community level factors that contribute to discharge status disparities. Such research can employ general linear models (GLM) or a multinomial logistic regression with coefficient estimates to estimate the impacts of community factors on racial or ethnic discharge disparities (Cobb et al., 2023; Jimenez et al., 2017).

State policies may also contribute to health care and health disparities in Texas. In this study, uninsurance played a significant role in most emergency department and inpatient outcomes among this population. Having public insurance such as Medicare or Medicaid, also had positive significance in predicting most ED and inpatient outcomes. Leaving against medical advice is the only discharge status outcome not influenced by insurance type or insurance status. Medicaid expansion has been successful in other states in reducing the uninsured population and the probability of experiencing unmet needs for mental health treatment (Wen et al., 2015). The

benefits under the umbrella of the Affordable Care Act, including Medicaid expansion, have greatly benefitted more individuals by providing health care coverage—especially to those in need of mental health care (Beronio et al., 2014). However, Texas did not expand Medicaid and is unlikely to do so any time in the near future. As such, creative and local solutions are needed, including providing more funding to outpatient community programs and hospitals for the chronic mentally ill and medical condition comorbid population.

One way that Texas has achieved more funding for these programs, is through the Texas Medicaid Transformation Waiver. This initiative is a DSRIP (Delivery System Reform Incentive Payment) program to plan and create projects/programs for uninsured/low-income individuals in the most populous regions (Revere et al., 2016; Shenoy et al., 2019). It has been documented that this DSRIP program did have some successes such as the collaboration between health care entities and creating/building patient care outreach and projects and the reimbursement to organizations based on metrics (Shenoy et al., 2019). The importance of creating more programs and collaborations will have a long-term impact on overall health care costs and vulnerable populations (NeMoyer et al., 2022).

Future quantitative and qualitative work examining Texas health care financing innovations and assessing their association with racial and ethnic disparities for individuals with chronic mental illness and medical condition comorbidities, may indicate emerging promising policy practices to reduce these disparities. This has been studied in other states in emergency department visits and inpatient utilization using both state data and the National Survey on Drug Use and Health (NSDUH) (Frank et al., 2003; Wen et al., 2015; Yue et al., 2022). Although racial and ethnic disparities in this population have been sparingly studied, Texas has not made use of this data for this population, which would add to this literature.

Using survival analysis with multiple years of data would provide more evidence about longer-term use patterns, including readmission rates and use of long-term care. Another possibility is looking at other states and comparing the readmission rates with those throughout Texas, and comparing different regions and different outcomes including remission, worsening symptoms, and outpatient initiation and adherence of treatment and resources. These studies would continue to look at racial and ethnic disparities and possibly delve more into the Gelberg-Andersen Behavioral Model for Vulnerable Populations by looking at the impact of predisposing, enabling, and need factors on ED and inpatient readmissions and outcomes.

Implications – Future Research Questions

Further expanding on this current study, a few questions arise: 1) *What are readmission rates among racially and ethnically marginalized individuals diagnosed with comorbid mental and medical conditions in Texas EDs?* Data from the Public Use Data Files for Texas Emergency Departments, specifically targeting readmission rates, would be utilized in a quantitative study. Answering this follow-up question would further expand on the current study to distinguish readmission rates in Texas emergency departments. 2) *Expand to other states – Comparison of readmission rates among racially and ethnically marginalized individuals diagnosed with comorbid mental and medical conditions in ERs in Texas, Wisconsin, and Minnesota?* Since Wisconsin and Minnesota have some of the highest number of racial disparities, this study will continue to expand on readmission rates to compare this ED data across three states. 3) *What are barriers that lead to readmissions for individuals with comorbid conditions in Austin? Are there racial and ethnic disparities?* Data from Community Mental Health or Austin ED data would be combined with qualitative data capturing patients' lived experiences of barriers to health care and inpatient and ED discharge.

Implications and Significance

This study addresses not only demographic factors but also county level factors and the effects of these factors on inpatient utilization outcomes and ER discharge outcomes. These findings provide critical information that can influence policies and procedures not only in hospital facilities, but also at the city, county, and state levels.

Questions and Implications for Policy and Practice: 1) *At the community level, what policies could be expanded or what new policies can replace Medicaid expansion/1115 waivers to reduce barriers to post-acute care in Texas? At the national level?* Assessing expansion of ACA vs non-expansion in Texas and at the national level will contribute to understanding the effects of both for individuals, communities, and health care entities. The assessment could include specifically considering waivers, coalitions, community homes and collaborative care. 2) *Practice – Discharge Planning overhaul* – How can providers improve or change their discharge processes to decrease avoidable readmissions? Providing and placing more responsibility and accountability on medical and mental hospitals in quality improvement standards could in the long-term assist in less patient readmissions and save hospitals money for staff and care. Discharge care planning with not only the patient but also with caregivers or family could provide better education and compliance to increase safer discharges and prevent readmissions. Having an aftercare coordinator among a multidisciplinary team, who followed up several times after discharge may also help in decreasing avoidable readmissions.

Limitations

This study has several limitations. First, this study used secondary data and accuracy and completeness may be skewed. The Texas Hospital and ED Public Use Data files are audited by DSHS' vendor and sent back to hospitals as needed, if there were errors, which may be corrected

or accepted. Second, some of the data recorded and accepted may reflect bias. Another limitation is the sample size. Both inpatient and outpatient data have some missing data therefore, some data and patient outcomes had to be eliminated. Another limitation to this study is that this data is limited to Texas and only represents a very small proportion of the U.S. population. Finally, data included was from the year 2019, which is the most current from Texas during the timeframe of this study, without having the effects from the Covid-19 pandemic. The Covid-19 pandemic may have aided in limiting data that was collected and may alter how an individual was medically treated in the ED or inpatient.

Conclusion

This study represents the first study using Texas ED (THEDPUD) data concurrently with CHR data to assess racial and ethnic disparities in inpatient utilization and outpatient discharge status among individuals with a chronic mental illness (CMI) and physical health comorbidity. It is the first step in future studies with this data and more complex multilevel analysis representative of this specific population. The findings identified variation amongst both inpatient and outpatient outcomes and the association with any demographic and county level variables. Despite the variation, this study suggested that race and ethnicity are not the only variable correlated with a significant association related to inpatient utilization and discharge status. Other demographic and county level variables are also significantly associated and predict an individual's inpatient utilization and discharge status.

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APPENDIX A

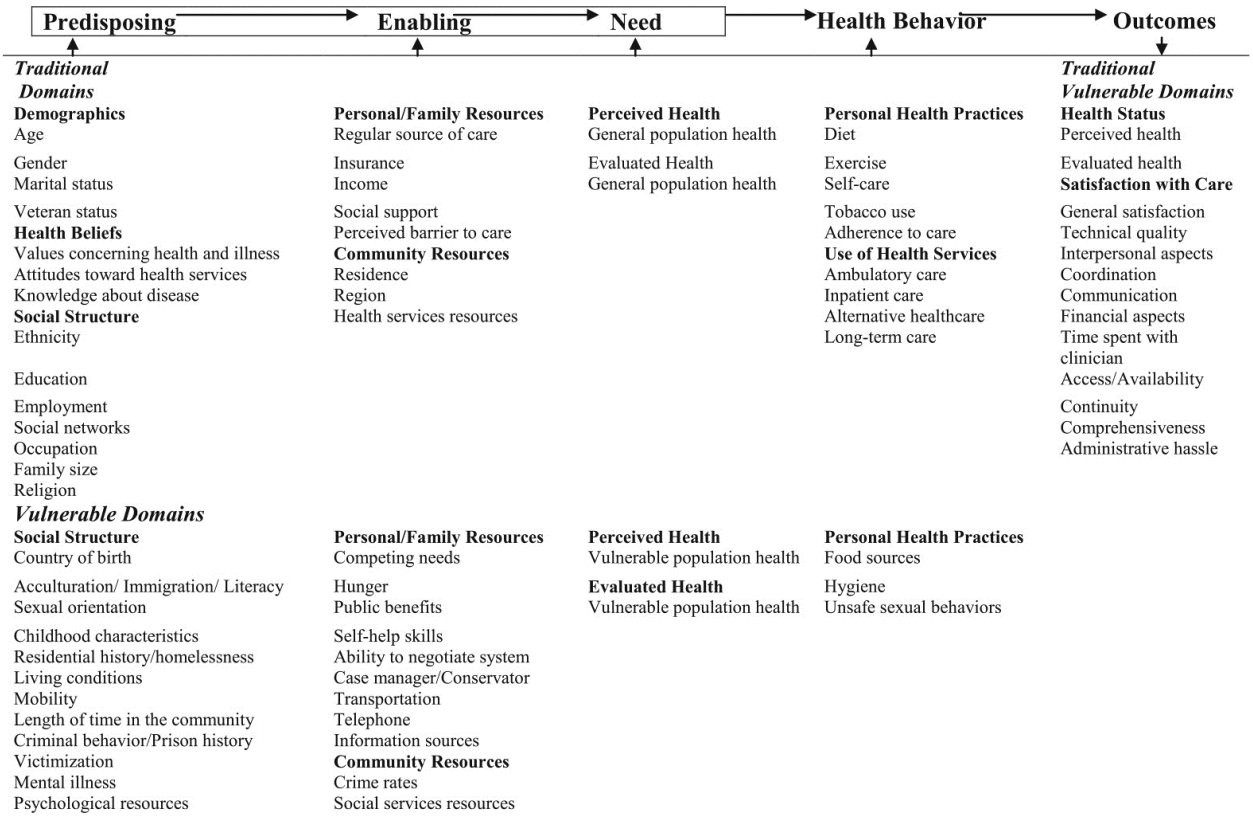

Figure 1. Behavioral model for vulnerable populations. Source: (Gelberg et al., 2000b)

APPENDIX B

Definition of Measures

Predictor Variable	Source	Type
Race	THEDPUD	Categorical
Ethnicity	THEDPUD	Categorical
Outcome Variables		
Discharge to Home/Self-Care	THEDPUD	Categorical
Discharge or Transfer to Short-Term Facility	THEDPUD	Categorical
Left Against Medical Advice	THEDPUD	Categorical
Discharge to Court/Law Enforcement	THEDPUD	Categorical
Transfer to Psychiatric Facility (Inpatient Only)	THEDPUD	Categorical
Covariates		
Gender	THEDPUD	Categorical
Age	THEDPUD	Categorical
Homeless Status (Outpatient Only)	THEDPUD	Categorical
Patient Insurance Type	THEDPUD	Categorical
Presence of Substance Use/Abuse	THEDPUD	Categorical
County Rates of Residents's Long Commute	CHRR	Continuous
County Rates of Mental Health Provider Availability	CHRR	Continuous
County Rates of Violent Crime Rate	CHRR	Continuous
County Rates of Severe Housing Problems	CHRR	Continuous
County Rates of Overcrowding	CHRR	Continuous
County Rates of Inadequate Facilities	CHRR	Continuous

*THEDPUD = Texas Hospital Emergency Department Public Use Data
**CHRR = County Health Rankings and Roadmaps

APPENDIX C

Table 4. ED Outcome - Discharge to Court or Law Enforcement				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	0.582	0.007	0.392	0.863
Asian or Pacific Islander	0.369	0.327	0.050	2.705
Other	1.027	0.911	0.641	1.646
American Indian/Eskimo/Aleut	**Combined with Other			
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.558	0.004	0.377	0.826
Age				
18-44 yrs old	REF			
45+ yrs old	1.610	0.002	1.187	2.184
Gender				
Female	REF			
Male	1.381	0.023	1.045	1.825
Homeless				
Not Experiencing Homelessness	REF			
Experiencing Homelessness	N/A	N/A	N/A	N/A
Insurance				
Private Only	REF			
Public Only	2.280	0.000	1.503	3.461
Dual Insurance	2.036	0.112	0.847	4.895
Uninsured	1.757	0.008	1.157	2.669
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Diagnosed with Substance Use/Abuse	1.995	0.236	0.636	6.259
Long Commute	0.995	0.586	0.979	1.012
Mental Health Provider Availability	1.000	0.752	0.979	1.000
Violent Crime Rate	1.000	0.863	0.999	1.001
Severe Housing Problems	0.983	0.684	0.906	1.067
Overcrowding	1.086	0.152	0.970	1.215
Inadequate Facilities	0.992	0.958	0.727	1.352

*REF=Reference Group

*$p < 0.05$

APPENDIX D

Table 5. ED Outcome - Discharge or Transfer to Short Term Facility				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	0.999	0.952	0.964	1.035
Asian or Pacific Islander	0.336	0.000	0.325	0.348
Other	1.112	0.000	1.095	1.130
American Indian/Eskimo/Aleut	0.237	0.000	0.204	0.276
Ethnicity				
Non-Hispanic	REF			
Hispanic	1.057	0.000	1.034	1.080
Age				
18-44 yrs old				
45+ yrs old	1.005	0.687	0.979	1.032
Gender				
Female	REF			
Male	8.000	0.000	0.775	0.814
Homeless				
Not Experiencing Homelessness	REF			
Experiencing Homelessness	0.299	0.000	0.169	0.529
Insurance				
Private Only	REF			
Public Only	0.792	0.000	0.776	0.808
Dual Insurance	0.854	0.000	0.787	0.926
Uninsured	0.852	0.000	0.833	0.871
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Diagnosed with Substance Use/Abuse	0.549	0.000	0.485	0.621
Long Commute	0.991	0.549	0.960	1.022
Mental Health Provider Availability	1.000	0.805	0.999	1.001
Violent Crime Rate	1.000	0.827	0.998	1.003
Severe Housing Problems	0.960	0.535	0.844	1.092
Overcrowding	1.019	0.845	0.845	1.228
Inadequate Facilities	1.122	0.667	0.665	1.893

*REF=Reference Group

*$p < 0.05$

APPENDIX E

Table 6. ED Outcome - Discharge to Home/Self-Care				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	1.060	0.008	1.015	1.106
Asian or Pacific Islander	1.111	0.230	0.936	1.319
Other	1.070	0.033	1.006	1.138
American Indian/Eskimo/Aleut	1.141	0.466	0.800	1.628
Ethnicity				
Non-Hispanic	REF			
Hispanic	1.367	0.000	1.300	1.438
Age				
18-44 yrs old	REF			
45+ yrs old	0.907	0.000	0.877	0.938
Gender				
Female	REF			
Male	0.596	0.000	0.577	0.616
Homeless				
Not Experiencing Homelessness	REF			
Experiencing Homelessness	0.196	0.000	0.126	0.306
Insurance				
Private Only	REF			
Public Only	0.502	0.000	0.479	0.526
Dual Insurance	0.570	0.000	0.513	0.635
Uninsured	0.693	0.000	0.662	0.727
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Diagnosed with Substance Use/Abuse	0.337	0.000	0.294	0.386
Long Commute	1.000	0.987	0.994	1.006
Mental Health Provider Availability	1.000	0.699	1.000	1.000
Violent Crime Rate	1.000	0.424	1.000	1.001
Severe Housing Problems	1.039	0.004	1.012	1.067
Overcrowding	0.965	0.068	0.930	1.003
Inadequate Facilities	0.999	0.983	0.919	1.086

*REF=Reference Group

*$p < 0.05$

APPENDIX F

Table 7. ED Outcome - Left Against Medical Advice				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	0.864	0.000	0.801	0.932
Asian or Pacific Islander	0.765	0.100	0.556	1.052
Other	0.767	0.000	0.685	0.858
American Indian/Eskimo/Aleut	0.929	0.813	0.507	1.702
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.766	0.000	0.704	0.834
Age				
18-44 yrs old	REF			
45+ yrs old	0.836	0.000	0.788	0.886
Gender				
Female	REF			
Male	1.472	0.000	1.388	1.560
Homeless				
Not Experiencing Homelessness	REF			
Experiencing Homelessness	2.654	0.014	1.215	5.797
Insurance				
Private Only	REF			
Public Only	2.105	0.000	1.927	2.299
Dual Insurance	1.587	0.000	1.286	1.960
Uninsured	1.748	0.000	1.603	1.907
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Diagnosed with Substance Use/Abuse	1.612	0.001	1.216	2.136
Long Commute	1.007	0.104	0.998	1.016
Mental Health Provider Availability	1.000	0.289	1.000	1.000
Violent Crime Rate	1.001	0.034	1.000	1.002
Severe Housing Problems	0.986	0.510	0.945	1.028
Overcrowding	1.052	0.100	0.990	1.118
Inadequate Facilities	0.981	0.784	0.857	1.123

*REF=Reference Group

*$p < 0.05$

APPENDIX G

Table 8. Inpatient Outcome - Discharge to Court or Law Enforcement				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	3.378	0.000	1.922	5.936
Asian or Pacific Islander	N/A	N/A	N/A	N/A
Other	1.918	0.123	0.838	4.392
American Indian/Eskimo/Aleut	N/A	N/A	N/A	N/A
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.597	0.249	0.248	1.435
Age				
18-44 yrs old	REF			
45+ yrs old	1.294	0.308	0.788	2.123
Gender				
Female	REF			
Male	11.533	0.000	5.481	24.270
Insurance				
Private Only	REF			
Public Only	0.194	0.000	0.108	0.348
Dual Insurance	0.012	0.000	0.002	0.086
Uninsured	0.148	0.000	0.076	0.287
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Diagnosed with Substance Use/Abuse	1.394	0.651	0.331	5.870
Long Commute	1.009	0.724	0.960	1.060
Mental Health Provider Availability	1.000	0.156	0.999	1.000
Violent Crime Rate	1.007	0.001	1.003	1.011
Severe Housing Problems	1.055	0.624	0.852	1.307
Overcrowding	0.932	0.691	0.657	1.321
Inadequate Facilities	0.193	0.009	0.056	0.665

*REF=Reference Group

** $p < 0.05$

APPENDIX H

Table 9. Inpatient Outcome - Discharge or Transfer to Short Term Facility				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	0.974	0.362	0.919	1.031
Asian or Pacific Islander	0.858	0.080	0.723	1.019
Other	0.944	0.118	0.879	1.015
American Indian/Eskimo/Aleut	0.867	0.546	0.545	1.378
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.760	0.000	0.716	0.806
Age				
18-44 yrs old	REF			
45+ yrs old	1.093	0.000	1.054	1.133
Gender				
Female	REF			
Male	1.095	0.000	1.055	1.136
Insurance				
Private Only	REF			
Public Only	2.224	0.000	2.063	2.397
Dual Insurance	1.535	0.000	1.422	1.658
Uninsured	1.539	0.000	1.422	1.666
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Substance Use/Abuse Diagnosis	1.120	0.063	0.994	1.261
Long Commute	0.997	0.072	0.994	1.000
Mental Health Provider Availability	1.000	0.776	1.000	1.000
Violent Crime Rate	1.000	0.97	1.000	1.000
Severe Housing Problems	0.985	0.055	0.970	1.000
Overcrowding	1.001	0.907	0.979	1.025
Inadequate Facilities	1.023	0.459	0.963	1.088

*REF=Reference Group

** $p < 0.05$

APPENDIX I

Table 10. Inpatient Outcome - Discharge to Home/Self-Care				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	0.975	0.354	0.924	1.028
Asian or Pacific Islander	1.006	0.943	0.863	1.172
Other	1.014	0.665	0.951	1.082
American Indian/Eskimo/Aleut	1.359	0.148	0.897	2.059
Ethnicity				
Non-Hispanic	REF			
Hispanic	1.325	0.000	1.256	1.397
Age				
18-44 yrs old	REF			
45+ yrs old	0.926	0.000	0.896	0.957
Gender				
Female	REF			
Male	0.968	0.063	0.935	1.002
Insurance				
Private Only	REF			
Public Only	0.515	0.000	0.483	0.549
Dual Insurance	0.740	0.000	0.694	0.789
Uninsured	0.656	0.000	0.614	0.701
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Substance Use/Abuse Diagnosis	0.615	0.000	0.548	0.689
Long Commute	1.001	0.762	0.997	1.004
Mental Health Provider Availability	1.000	0.556	1.000	1.000
Violent Crime Rate	1.000	0.360	1.000	1.000
Severe Housing Problems	1.009	0.288	0.992	1.027
Overcrowding	1.018	0.168	0.992	1.044
Inadequate Facilities	0.985	0.643	0.923	1.051

*REF=Reference Group

** $p < 0.05$

APPENDIX J

Table 11. Inpatient Outcome - Left Against Medical Advice				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	1.366	0.006	1.096	1.704
Asian or Pacific Islander	0.618	0.289	0.254	1.505
Other	1.086	0.562	0.822	1.435
American Indian/Eskimo/Aleut	0.981	0.985	0.136	7.090
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.887	0.302	0.706	1.114
Age				
18-44 yrs old	REF			
45+ yrs old	0.896	0.161	0.769	1.044
Gender				
Female	REF			
Male	1.749	0.000	1.501	2.039
Insurance				
Private Only	REF			
Public Only	0.906	0.455	0.699	1.174
Dual Insurance	0.461	0.000	0.342	0.620
Uninsured	0.927	0.583	0.706	1.216
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Substance Use/Abuse Diagnosis	1.555	0.040	1.020	2.370
Long Commute	0.999	0.809	0.988	1.009
Mental Health Provider Availability	1.000	0.180	1.000	1.000
Violent Crime Rate	1.000	0.941	0.999	1.001
Severe Housing Problems	0.957	0.105	0.907	1.009
Overcrowding	1.120	0.003	1.040	1.207
Inadequate Facilities	1.090	0.389	0.895	1.328

*REF=Reference Group

** $p < 0.05$

APPENDIX K

Table 12. Inpatient Outcome - Transfer to Psychiatric Facility				
	OR	**p>**	**95% CI**	
Race				
White	REF			
Black	1.139	0.248	0.913	1.421
Asian or Pacific Islander	1.421	0.205	0.825	2.449
Other	1.259	0.087	0.967	1.640
American Indian/Eskimo/Aleut	0.929	0.941	0.129	6.710
Ethnicity				
Non-Hispanic	REF			
Hispanic	0.915	0.444	0.729	1.148
Age				
18-44 yrs old	REF			
45+ yrs old	1.489	0.000	1.278	1.735
Gender				
Female	REF			
Male	0.986	0.853	0.845	1.149
Insurance				
Private Only	REF			
Public Only	0.452	0.000	0.368	0.557
Dual Insurance	0.262	0.000	0.206	0.334
Uninsured	0.382	0.000	0.304	0.481
Substance Use/Abuse				
No Substance Use/Abuse Diagnosis	REF			
Substance Use/Abuse Diagnosis	4.781	0.000	3.691	6.193
Long Commute	0.998	0.640	0.988	1.007
Mental Health Provider Availability	1.000	0.080	1.000	1.000
Violent Crime Rate	1.000	0.482	0.999	1.001
Severe Housing Problems	1.021	0.382	0.975	1.068
Overcrowding	0.987	0.710	0.919	1.059
Inadequate Facilities	0.757	0.028	0.591	0.971

*REF=Reference Group

** $p < 0.05$