ABSTRACT

Title of Dissertation:	PSYCHOLOGICAL DISTRESS AND NEED FOR MENTAL HEALTHCARE: EXAMINING AND MODELING PREVALENCE & NEED USING MULTIPLE DATASETS
	Ebony Allen Toussaint, Doctor of Philosophy, 2021
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The Patient Protection and Affordable Care Act (ACA) expanded Medicaid eligibility to include non-elderly adults with incomes up to 138 percent of the federal poverty level. As a result, Medicaid enrollment by individuals with severe psychological distress increased (Gonzales et al, 2017). The goal of this dissertation is to use patient-reported outcome measures to examine whether disparities in access to mental healthcare exist in California, a state that expanded health insurance coverage dramatically through the ACA. The literature review in this dissertation discusses the use of patient-reported outcomes, specifically psychological distress, to determine need for mental healthcare. Established theory on behavioral health services utilization is used to examine mental health disparities with specific evidence on race/ethnic group affiliation, health insurance status, and geographic access. California Health Interview Survey data and Medical Expenditure Panel Survey data from 2014-2018, is used to model both the prevalence of and need for mental healthcare among non-elderly adults. Findings suggest the need to examine moderate levels of distress, as this population demonstrates the need for prevention and early intervention. Those most at risk for high levels of distress include non-elderly adults with low socioeconomic status, as socioeconomic status was a better predictor of psychological distress than racial/ ethnic group affiliation. Additionally, health insurance remains a significant predictor of whether non-elderly adults have access to needed healthcare. While insurance status is significant in this study, it is important to note that insurance status is connected to employment, and perhaps other socioeconomic factors. However, findings also suggest that the utilization of mental healthcare is extremely significant among individuals experiencing serious psychological distress and those who report subjective or felt need for mental healthcare. This is an important finding given that individuals with higher levels of distress often experience disruptions in their daily living, including interruptions in social and occupational activities. Taken together, the results of this dissertation research suggest that health insurance coverage alone is an insufficient predictor of adequate mental healthcare access.

PSYCHOLOGICAL DISTRESS AND NEED FOR MENTAL HEALTHCARE: EXAMINING AND MODELING PREVALENCE & NEED USING MULTIPLE DATASETS

by

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Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

For Etienne Clement Toussaint, my partner, my best friend, and unwavering source of inspiration and encouragement.

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First, I must acknowledge my spouse, Etienne Clement Toussaint, who has co-parented and co-labored alongside me to take care of our boys and our home. Our friendship is a never-ending adventure and I'm overwhelmed with gratitude for your love towards me. And, to our boys, Etienne II and Edward Vincent — you've made me a better research scientist. I am more thoughtful because of you. You constantly motivate me to not only research health, but to live a healthy life. Because of you, I have had many dance breaks, pizza parties, and sing-a-longs.

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List of Abbreviations

Agency for Healthcare Research & Quality	AHRQ
American Psychological Association	APA
California Health Interview Survey	CHIS
Centers for Medicare & Medicaid Services	CMS
Federal Office of Rural Health Policy	FORHP
Health Professional Shortage Area	HPSA
Health Resources and Services Administration	HRSA
Medical Expenditure Panel Survey	MEPS
Mental Health Services Act	MHSA
National Health Interview Survey	NHIS
National Institutes of Health	NIH
National Rural Health Association	NRHA
Office of Management and Budget	OMB
Patient Protection and Affordable Care Act	ACA
Patient-reported Outcome	PROs
Patient-reported Outcome Measures	PROMs
Random Digit Dialing	RDD
Rural-Urban Commuting Area	RUCA

Introduction

The aim of this dissertation is to use patient-reported outcome measures to examine whether disparities in access to mental healthcare exist in California, a state that expanded health insurance coverage dramatically through the Patient Protection and Affordable Care Act (ACA). The ACA expanded Medicaid eligibility to include non-elderly adults with incomes up to 138 percent of the federal poverty level. Medicaid programs have historically limited eligibility to children, adults with dependent children, disabled individuals, and some elderly. As a result, Medicaid enrollment by individuals with severe psychological distress increased more than enrollment by adults with other health conditions (Gonzales et al., 2017). In 2017, an estimated 11.2 million adults in the United States, or about 4.5% of adults, were diagnosed with a severe psychological condition. Information about the characteristics of adults with mental disorders is important for designing policies focused on prevention, early intervention, and treatment. This topic is timely and relevant due to the reported increase in levels of psychological distress during the ongoing COVID-19 pandemic (Berkowitz & Basu, 2021).

While studies have examined individuals experiencing severe levels of psychological distress, little is known about non-elderly adults who experience moderate psychological distress . This dissertation utilizes patient-reported outcome measures to examine unmet need for mental healthcare, notwithstanding the expansion of health insurance coverage under the ACA. In previous studies, the observed need for mental healthcare remained stagnant or increased despite expansions of health insurance coverage, with authors alluding to costs (financial barrier) and social stigmas (attitudinal barrier) as possible countervailing factors (Walker et al., 2015). This dissertation will estimate mathematical models [of unmet mental healthcare need] using widely cited theories of behavioral health services utilization.

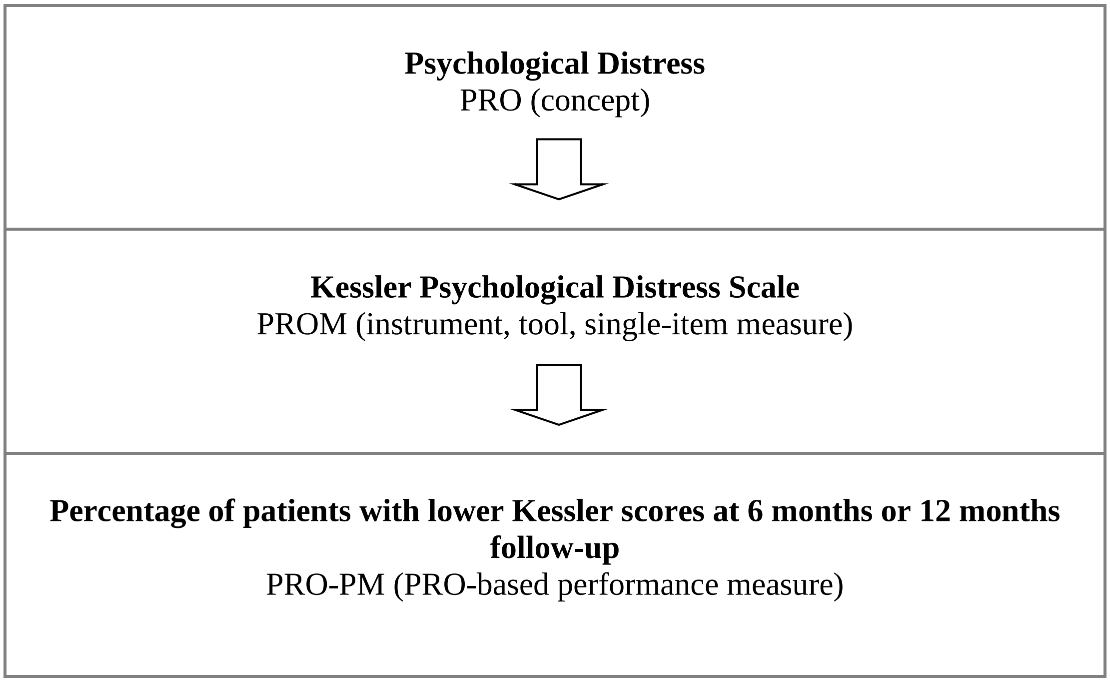
Chapter One introduces conventional approaches to studying the patient-reported outcome measure psychological distress, and mental health disparities. Next, Chapter Two explains the foundational characteristics of psychological distress, clarifying why certain populations are at increased risk of experiencing moderate or severe levels of psychological distress. Then, Chapter Three studies unmet need for mental healthcare. Specifically, models are estimated for mental healthcare visits using psychological distress as the primary regressor. Chapter Four follows by exploring the implications of my model's findings, revealing critical barriers to mental healthcare by comparing rural-urban differences in access and unmet need. This dissertation concludes by discussing how patient-reported outcomes, such as psychological distress, can be used to inform clinical mental health policy and practices impacting vulnerable populations across the country, such as those in rural areas.

Literature Review

Patient-reported outcomes, or PROs, include "any report of the status of a patient's (or person's) health condition, health behavior, or experience with healthcare that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else" (*NQF: Patient-Reported Outcomes*, n.d.). Patient-reported outcomes are important measures. Such measures not only incorporate patient perspectives into healthcare plans, but also inform healthcare providers of case-specific patient healthcare needs. When providers better understand the daily impact of a health condition or disease on their patients, they can quality healthcare. Experts have developed medical assessments to determine the severity and frequency of patient-reported outcomes, called patient-reported outcome measures (PROMs). PROMs are used to improve the quality of healthcare and have been proven to be highly reliable when compared to clinically charted data (Deshpande et al., 2011; Mercieca-Bebber et al., 2018; Wohlfahrt Peter et al., 2020).

Patient-reported outcomes are also utilized by the National Institutes of Health (NIH), the Centers for Medicare & Medicaid Services (CMS), and other governmental health agencies for performance measurement (i.e. PRO-PMs). Indeed, the National Quality Forum endorses the utilization of patient-reported outcomes for performance measurement and quality improvement (*NQF: Patient-Reported Outcomes in Performance Measurement*, n.d.). The figure below highlights the relationship between PROs, PROMs, and PRO-PMs in the context of psychological distress, using the Kessler Psychological Distress Scale as an example (Figure 1).

Figure 1. The Kessler Psychological Distress Scale and the Relationship between PROs, PROMs, and PRO-PMs



Kessler Psychological Distress Scale & *Need for Mental Healthcare*

The American Psychological Association (APA) defines psychological distress as “a set of painful mental and physical symptoms that are associated with normal fluctuations of mood in most people. In some cases, however, psychological distress may indicate the beginning of major depressive disorder, anxiety disorder, schizophrenia, somatization disorder, or a variety of other clinical conditions” ((*Psychological Distress – APA Dictionary of Psychology*, n.d.). Individuals with serious psychological distress experience symptoms similar to serious mental illnesses, such as schizophrenia and major depression (*Characteristics of Adults with Serious Psychological Distress as Measured by the K6 Scale, United States, 2001-04*, n.d.) To determine an individual’s level of psychological distress, healthcare providers may use the Kessler Psychological Distress Scale (Kessler 6), which was developed by Kessler and colleagues for the National Health Interview Survey (NHIS) with support from the National Center for Health Statistics.

Using the Kessler 6, respondents are asked to self-assess their mental health during a specified time frame. For example, respondents are asked: “During the past 30 days how often did you feel sad, nervous, restless, hopeless, worthless, and that everything was an effort?” The response ‘‘None of the time’’ is given a score of 0, while the response ‘‘all of the time’’ is given a score of 4. Then, the sum of the score for each question is tabulated, with the total possible score ranging from 0 to 24. A score of 13 or greater indicates serious psychological distress, which means these individuals are likely to have “mental health problems severe enough to cause moderate to serious impairment in social, occupational, or school functioning and to require treatment.” A score of 7-12 indicates moderate psychological distress. As a patient-reported outcome measure, the Kessler 6 is an abbreviated version of the Kessler 10. Healthcare providers also utilize the Kessler 6, or Kessler 10, to identify patients who regularly report “Some of the time” or “All of the time” (Andrews & Slade, 2001; R. Kessler et al., 2002). Often, these patients need a more thorough mental health assessment. Additionally, referral information may be provided to these patients. Patients who regularly report “A little of the time” or “None of the time” may benefit from early intervention or information to increase education on mental health.

Due to the Kessler 6’s brevity and consistency, it is the preferred screening tool for detecting probable mental illness (Prochaska et al., 2012). Numerous studies have examined psychological distress and access to mental healthcare, with the large majority focusing on serious psychological distress (Cohen & Zammitti, 2016; Gonzales et al., 2017; Novak et al., 2018). Researchers have linked psychological distress, including low levels, with emergency department utilization and discuss the need for future research focused on populations experiencing moderate or mild symptoms of psychological distress (Stockbridge et al., 2014). Therefore, this study includes individuals experiencing moderate or severe levels of psychological distress compared to those with no or low levels of distress.

Mental Health Disparities and Unmet Need

Researchers have identified disparities in access to and quality of mental healthcare in the United States (Alegría et al., 2016; Cook et al., 2016; McGuire & Miranda, 2008). These disparities emerge when mental healthcare access and quality are quantified across various population metrics, from health insurance coverage status, to poverty level, sex, health status, racial/ethnic group affiliation, and even geography. Adults with serious psychological distress are likely to have experienced or suffer from ongoing chronic health conditions, such as diabetes and heart disease (*Products - Data Briefs - Number 203 - June 2015*, 2019). Researchers typically include income levels based on federal measures of poverty in their studies. However, these measures alone do not adequately capture financial concerns and instead serve as a proxy for wealth. Indeed, one study focusing on non-elderly adults with severe levels of distress explored *subjective* financial barriers, such as worries about paying bills, which the study authors considered to be a previously neglected area in the literature (Weissman et al., 2020). Of note, the study authors found that financial concerns were prevalent and varied by gender. They also found such financial concerns to be associated with risk for severe levels of distress.

Additionally, poverty has been associated with unhoused persons or homelessness (DMin, 2012; Herring et al., 2020; Roisman, 2000; Timmer et al., 2019). Many racial and ethnic minorities, especially Latinos, are more likely to live in multigenerational households or reside with extended family members (Lofquist, n.d.). This suggests potential caretaking duties, which is also common in minoritized and historically oppressed populations (Rote & Moon, 2018). Moreover, while Latinos are underrepresented among the homeless or those in the foster care system, they are overrepresented, along with other vulnerable, high-need populations, in the incarcerated, veterans, trauma survivors, and individuals with substance use disorders (Marshall et al., 2009; Salas-Wright et al., 2015; Travis et al., 2014). The growth of incarceration in the United States: Exploring causes and consequences.. Findings from another study found differences in level of psychological distress based on gender. Immediately before the implementation of the ACA, researchers found that "in every age group, women were more likely to have serious psychological distress than men," (Weissman et al., 2020). Women report higher healthcare utilization rates than men including more primary care visits, diagnostic and screening services (Salganicoff et. al., 2014). At the intersection of race (racism) and sex (sexism), BIPOC women experience higher levels of poverty including: 22 percent of Native American women, 20 percent of Black women, and 18 percent of Latino women live in poverty, compared to only 9 percent of white women (Fins, n.d.). Women who identify as transgender or immigrant women experience additional intersections of discrimination that may limit their income, resulting in poverty (Bleiweis, 2020).

And, among non-elderly adults, women have higher rates of fair or poor self-reported health status (NCHS, 2016); this may demonstrate that women have unmet healthcare needs, despite higher levels of healthcare utilization.

Access to needed healthcare drives health disparities. Access to healthcare, meaning healthcare utilization should highly correlate with need for healthcare. However, healthcare may be needed, but not obtained due to various factors. Healthcare access is defined as “the timely use of personal health services to achieve the best possible health outcomes,” (Institute of Medicine (US) Committee on Monitoring Access to Personal Health Care Services, 1993) and unmet need is defined as “the difference between the services judged necessary and the services actually received, and stem from barriers related to accessibility, availability and acceptability” (Pappa et al., 2013). One of the most cited research studies, the RAND Health Insurance Experiment, elucidates the association between financial barriers and unmet need for healthcare (Welch et al., 1987). In the United States, the existence of both a usual source of primary care and unmet healthcare needs has been found to vary across many sociodemographic indicators, including race and ethnicity (Horner-Johnson & Dobbertin, 2014). While rural communities include about 20% of the U.S. population, less than 10% of physicians provide healthcare in these communities. Unmet need for healthcare drives hospitalizations, which can be avoided with preventative healthcare; this, in turn, drives healthcare costs (*Potentially Preventable Hospitalizations — United States, 2001–2009*, n.d.).

Moreover, healthcare utilization is determined by need: whether individuals know they need healthcare, whether they want to obtain healthcare, and whether they can access healthcare. When mental healthcare needs go unmet, there may be consequences in the form of burdens on individual patients, caretakers, and families or community members. Further, unmet healthcare needs may impose additional burdens on impoverished communities or minoritized racial and ethnic groups. For example, racial and ethnic minorities who reside in rural areas report longer travel times and transportation difficulties when accessing needed healthcare (Wong et al., 2017). This dissertation study seeks to investigate any disparities, while more closely examining disparities based on health insurance status, geography, and racial/ethnic group affiliation.

Race and Ethnicity

Racial and ethnic minorities comprise 41 percent of non-elderly individuals living in the United States (KFF, 2016). Research has been conducted on racial and ethnic disparities in behavioral health services utilization for decades. Yet, disparities persist. Various studies have been conducted using the National Academy of Medicine’s definition of disparity: a difference in health care quality not due to differences in health care needs or preferences of the patient. Using this definition, researchers have found that the “overall spending for Blacks and Latinos on outpatient mental health care is about 60% and 75% of white rates, respectively, after taking into account need for care” (McGuire et al., 2006). Other studies have taken a different approach to conceptualizing disparity. For example, the Agency for Healthcare Research & Quality (AHRQ) defines disparities as any differences between populations without consideration of need for care. Despite the acceptance of a standard definition among scholars, “Racial and ethnic disparities in health care exist even when insurance status, income, age, and severity of conditions are comparable" (McGuire & Miranda, 2008).

Additionally, researchers have argued that "preferences" among African Americans, and other racial/ethnic groups, are not simply "preferences" in the colloquial sense (Alvidrez et al., 2010; *Health and Mental Health Policies' Role in Better Understanding and Closing African American–White American Disparities in Treatment Access and Quality of Care. - PsycNET*, n.d.) Rather, preferences are rooted in the lived experiences of African Americans. According to Snowden, "Treatment preferences can be socially conditioned, sometimes by circumstances we as a society should not accept." Much of the literature cites social stigma as a barrier to mental healthcare (Campbell & Mowbray, 2016; Corrigan, 2004; Gary, 2005; Golberstein et al., 2008; Rost et al., 1993; Thornicroft, 2008). However, as McGuire & Miranda (2008) reveal, "preferences" for treatment, or refusal rates, are often insignificant indicators or health status and, consequently, cannot account for healthcare disparities. The Surgeon General's Report *Mental Health: Culture, Race, and Ethnicity* stated, "despite the existence of effective treatments, disparities lie in the availability, accessibility, and quality of mental health services for racial and ethnic minorities," (Office of the Surgeon General (US) et al., 2001). Minoritized persons still experience less mental healthcare access or access to behavioral health services than non-Hispanic whites (Alegría et al., 2016).

The lack of comfort that Black and minoritized patients experience when seeking healthcare for mental or emotional needs may relate less to social stigma, and more to unconscious and implicit biases woven into healthcare practices (Diala et al., 2000). Beyond medical experimentation (e.g. Tuskegee), racism is embedded in mental healthcare and other medical specialties (McKenzie & Bhui, 2007; Suite et al., 2007). Black and other minoritized patients have been reported to experience longer wait times for healthcare services (C et al., 2014; Morgan et al., 2015; Schrader & Lewis, 2013), under-treatment of pain due to racist beliefs of the pain tolerance of racial and ethnic minorities (Bonham, 2001; Narayan, 2010; Trawalter & Hoffman, 2015), and misdiagnosis or mistreatment of diseases or illnesses (Atdjian & Vega, 2005; *Disparities Within Minority Mental Health Care | NAMI: National Alliance on Mental Illness*, n.d.).

Even more, due to ongoing racism in medical and scientific research, Black and other minoritized persons are less likely to participate in clinical research studies. Lack of participation may lead to unresponsiveness to certain treatment plans or traditional pharmacological interventions for mood and depressive disorders (Bailey et al., 2009). These factors can contribute to uncertainty among healthcare providers on best practices for treating racial and ethnic minorities who experience moderate or severe levels of psychological distress. Some researchers note that minoritized racial and ethnic groups may be more comfortable speaking with healthcare providers if language barriers are considered during the development of service delivery models. Indeed, Latinos and Asians report difficulty communicating with doctors from other racial and ethnic groups (Mead et al., n.d.). The existence of language barriers may contribute to lower detection rates or the misdiagnosis of psychiatric conditions by clinicians in primary care settings. Without early detection of distress, racial and ethnic minorities may not be identified for needed mental healthcare. Effective communication with patients is crucial for medication adherence and appropriate follow-up with healthcare providers.

Structural barriers, such as implicit biases and system racism that hinder healthcare insurance uptake among racial and ethnic minorities, also contribute to mental healthcare disparities across racial and ethnic lines. After the implementation of the ACA, non-elderly Latino, Black, and Native American adults remain more likely than whites to be uninsured despite gains in health insurance coverage (KFF, 2016). For example, Blacks are more likely to be uninsured, while Asians are typically insured. Further, despite higher rates of health insurance coverage, Asians typically experience lower rates of preventive care (Mead et al., n.d.; Snowden, 1982; Takada et al., 1998). Major barriers to healthcare among Asian Americans have been reported including language, culture, health literacy, and immigrant status (Kim et al., 2010). Such disparities may lead to higher levels of psychological distress, coupled with low rates of mental healthcare utilization. Even more, with the emergence of the COVID-19 pandemic and an associated increase in anti-Asian racism, the importance of mental healthcare among vulnerable populations has been amplified.

Perceived discrimination and racism are highly correlated with poor mental health outcomes (Brondolo et al., 2016; TonyN. Brown, 2008; D. R. Williams & Williams-Morris, 2000). Some research has found that race and racism is a more significant factor than health insurance status when examining disparities (Chou & Choi, 2013). According to the National Healthcare Quality and Disparities Report healthcare disparities continue among racial and ethnic minorities and individuals with certain socioeconomic factors such as low-income or uninsured (*2017 National*

Healthcare Quality and Disparities Report, n.d.).

Health Insurance

While racial and ethnic group affiliation remains a significant contributing factor to mental health disparities, health insurance coverage is a significant factor in access to mental healthcare. Public health insurance, such as Medicaid, plays an essential role in financing mental healthcare in the United States. Medicaid is the largest payer of mental healthcare (*Behavioral Health Services | Medicaid*, n.d.). Many researchers argue that Medicaid financing of mental healthcare has contributed to an emphasis on mental healthcare services being provided to Medicaid enrollees (Frank et al., 2003). However, Medicaid enrollees are the most likely to be in poor health because eligibility requirements necessitate severe disability or low-income (Hoffman & Paradise, 2008). Additionally, Medicaid has been criticized for not meeting the mental health needs of many enrollees based on the variation of services covered, service limitations, and the poor management or coordination of services (Shirk, 2008). The variation in Medicaid contributes to mental health disparities in access to and quality of care.

However, other studies assert that differences in access to care are confined to the privately insured (Snowden & Thomas, 2000). Health insurance can be a tricky concept, as more use does not always yield better health. Uninsured individuals may have poorer health than insured individuals because of lower healthcare use, but higher healthcare use among insured individuals may have no significant impact on health. Two opposing economic theories on health insurance suggest that purchasing insurances either makes one better or worse off. According to Mark Pauly’s Model of

Welfare Consequences of Insurance, consumers are worse off with health insurance coverage because they engage in wasteful behaviors by overusing healthcare services (Pauly, 1968). Such overuse, which drives an increase in healthcare spending, results in a "moral hazard," whereby individuals with healthcare insurance are incentivized to engage in risky behaviors, yet they do not bear the full costs of healthcare services that may result from those behaviors. Pauly concludes that health insurance subsidies, namely employer-sponsored tax benefits, are inefficient. Further, they fail to address the needs of the most vulnerable, including those with chronic health conditions and low-income individuals. Pauly's arguments are based on the belief that "the allocation of resources to health care should rest on individuals' choice of insurance, in light of their different needs and desires" (Pauly et al., 1991).

Conversely, John Nyman challenges us to rethink the "welfare implications of moral hazard" and view the purchase of health insurance as a transfer of income (Nyman, 2003). Nyman suggests that when individuals become ill, they consume more healthcare with health insurance, an income transfer that increases their individual welfare, and more generally, social welfare. The economic discourse about moral hazard relies upon the concept of "efficiency" as an analytical framework to examine the market for health insurance. However, when we consider efficiency alongside "equity", we can see that even in a so-called efficient scenario, there's still an inequitable distribution of health insurance and access to healthcare. Consequently, the desire to maximize efficiency has becomes a structural barrier. Even still, researchers continue to ask the question: does health insurance coverage improve health?

According to Weissman and colleagues, adults with higher levels of psychological distress are more likely to be uninsured (*Products - Data Briefs - Number 203 - June 2015*, 2019). Changes in Medicaid eligibility due to the implementation of the ACA facilitated the enrollment of individuals experiencing serious psychological distress at higher rates than other individuals with similar conditions (Gonzales et al., 2017). As a result, this population experienced changes in health insurance coverage, especially among non-elderly adults, and decreased financial barriers to mental healthcare (Novak et al., 2018). Overall, the Medicaid expansion has been associated with significant improvements in mental healthcare access among previously uninsured individuals, especially low-income adults with chronic health conditions (*Medicaid Expansion, Mental Health, and Access to Care among Childless Adults with and without Chronic Conditions | SpringerLink*, n.d.). Nationally, between 2010 and 2016, the rate of uninsurance among non-elderly adults decreased from 18.2 percent to 10.4 percent (Martinez et al., n.d.). After the implementation of the ACA, the rate of uninsurance among non-elderly individuals declined by 20 million (KFF, 2020). Despite these changes, the rate of uninsurance in rural areas remain high ("Health Insurance Coverage in Small Towns and Rural America," 2018).

Rural Health

Individuals experience less access to healthcare if providers don't exist in the area where they reside, or clinicians refuse to provide healthcare based on their health insurance status. Rural residents experience an inadequate supply of physicians, especially mental healthcare providers (Douthit et al., 2015). Approximately one in five Americans reside in a rural area (*Story Map Series*, n.d.). Rural residents tend to stay uninsured for longer periods of time than urban residents, but the Medicaid expansion due to the ACA contributed to greater uptake in health insurance coverage among rural residents than urban residents (Benitez & Seiber, 2018). Research indicates that Medicaid enrollees have better access to care than uninsured individuals. Further, Medicaid enrollees are less likely to delay or forgo needed healthcare due to costs. As a result, access to care and healthcare satisfaction among Medicaid enrollees are comparable to those among individuals with private insurance. Despite changes in health insurance and improvements to access to healthcare, concerns regarding geographic barriers to healthcare remain.

Even more, rural residents are not homogeneous. Racial and ethnic minority groups who reside in rural areas, such as Native Americans, have a lower quality of life and, consequently, often experience additional barriers to accessing needed healthcare. For example, when compared to other rural Americans, Blacks living in rural areas are more likely to report fair or poor quality of life, limited internet access, and financial problems (*Life in Rural America*, 2019). Historically, rural areas experience challenges related to higher levels of poverty and lower rates of employment. These challenges are significant among non-elderly adults who reside in rural areas, who are also more likely to be disabled (14%) than those in urban environments (9%) (Foutz et al., n.d.).

Health in rural America has been a primary concern since the start of the COVID-19 pandemic lockdowns in March 2020. As one of the most devastating and widespread pandemics in over a century, COVID-19 has impacted mental health tremendously (*COVID-19 Disrupting Mental Health Services in Most Countries, WHO Survey*, n.d.). Individuals in rural communities already experience increased risk of suicide (Hirsch & Cukrowicz, 2014). According to Mueller and colleagues, “the effects of the COVID-19 pandemic on rural populations have been severe, with significant negative impacts on unemployment, overall life satisfaction, mental health, and economic outlook” (Mueller et al., 2021). It’s difficult to fully conceptualize the health disparities in rural communities without a consistent, standard definition. The federal government utilizes various government definitions to determine rural health policy and programs.

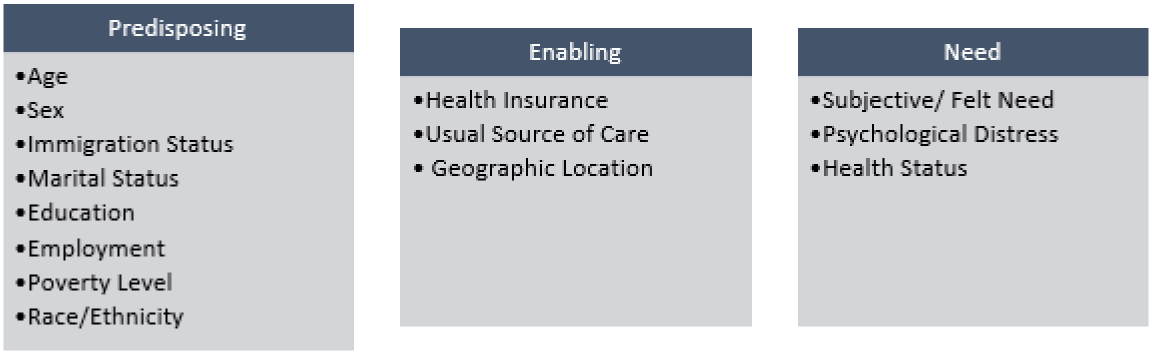
Conceptual Framework

Findings from previous studies discuss the need to identify characteristics of individuals who experience moderate or severe psychological distress and unmet mental healthcare (Houston et al., 2016). The characteristics of these individuals and their access to mental healthcare can be described using the Andersen Model of Behavioral Health Services Use and the Theory of Reasoned Action.

Andersen Model of Behavioral Health Services Use

I use the Andersen Model of Behavioral Health Services Use to guide the selection of covariates for my empirical analyses (Andersen, 1995). The Andersen Model has been utilized in numerous studies on psychological distress and health disparities (Egede & Dismuke, 2012; Straub & Cisternas, 2017; Weissman et al., 2020). The Andersen Model explains the various factors associated with health services utilization (Figure 2) and categorizes factors based on domains: need, predisposing, and enabling (Andersen, 1995).

Figure 2. Andersen Model of Behavioral Health Services Use



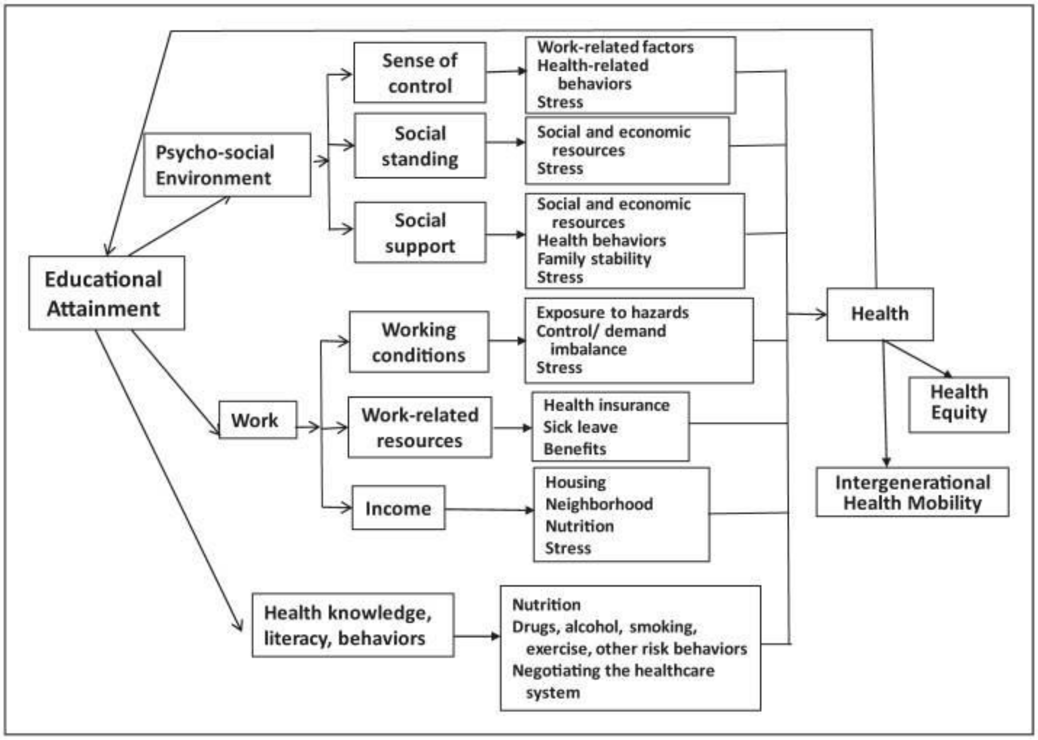
Need.

The Anderson model includes two types of need: evaluated need and perceived need. Previous literature has primarily focused on diagnosed individuals, which is a measure of clinical need or evaluated need. However, psychological distress is not a diagnosis. Thus, although individuals with serious psychological distress have a likely diagnosable mental illness based on their score of 13 or greater using the Kessler 6, they may not believe they need mental healthcare. Additionally, there may be some individuals who score lower with a score of 12 or less using the Kessler 6. Since they don't meet the criteria for a referral to specialty mental healthcare, they may not report any visits for mental or emotional needs while simultaneously reporting a need for mental healthcare. Others who score low on the Kessler 6 for psychological distress and report a mental healthcare visit, may be well-managed with their current mental health treatment. To better identify the implications of different approaches to engaging psychological distress in mental healthcare, subjective unmet need is also included in this study.

***Predisposing*.**

Predisposing factors are demographic factors, such as age, sex, and marital status. This domain includes demographic characteristics that may be *predisposed* to societal influences or social structures, such as education, employment, and race/ethnicity. Regarding age, only non-elderly adults are included in this study, as the Medicaid Expansion was focused on healthcare coverage among this population. Marital status has long been considered as a protective factor for health (Somers, 1979; Verbrugge, 1979). Unmarried individuals generally have worse self-reported health status (Robards et al., 2012). One study found that marriage may even improve certain mental health outcomes (*The Effects of Marriage on Health*, 2016). Education is one of the three factors related to socioeconomic status utilized in this dissertation study. Education is an essential component and cause of health. Education is measured in myriad ways in the literature. Some studies use years of schooling as a continuous measure, while others may use level of diploma/degree completion. Additionally, higher income is consistently associated with higher educational attainment, linking educational status to income or poverty level (Chetty et al., 2011). While this study is not primarily focused on education, consider the importance of educational attainment as depicted in Figure 3.

Figure 3. Education and Health Outcomes



While my analyses include several important factors, race/ethnicity is a primary focus of this dissertation and is included in the Andersen Model as a predisposing factor. Information on racial and ethnic group affiliation is important for assessing health disparities and to inform policy development and implementation. David Williams and Camara Jones have published extensively on the connections between racism and health, especially on racism and mental health by the former (Jones, 2000; D. R. Williams & Williams-Morris, 2000). Jones posits a framework for understanding racism and race-associated differences in health outcomes on three levels: institutionalized, mediated, and internalized.

According to Jones, racism is institutionalized through its historic and ongoing influence on the structure of law and public policy, thereby ‘legalizing’ its unequal outcomes while eliminating the need for an individual offender driven by racial motivations. Some examples of institutionalized racism include unequal access to information, unequal representation in government, and unequal financial resources across racial lines. Second, mediated racism captures the racially biased behaviors and racially discriminatory beliefs of individual actors, which can be intentional or unintentional, conscious or unconscious. According to the Kirwan Institute for The Study of Race and Ethnicity (*Understanding Implicit Bias | Kirwan Institute for the Study of Race and Ethnicity*, n.d.), implicit bias

> "*refers to the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner. These biases, which encompass both favorable and unfavorable assessments, are activated involuntarily and without an individual's awareness or intentional control. Residing deep in the subconscious, these biases are different from known biases that individuals may choose to conceal for the purposes of social and/or political correctness. Rather, implicit biases are not accessible through introspection. The implicit associations we harbor in our subconscious cause us to have feelings and attitudes about other people based on characteristics such as race, ethnicity, age, and appearance. These associations develop over the course of a lifetime beginning at a very early age through exposure to direct and indirect messages. In addition to early life experiences, the media and news programming are often-cited origins of implicit associations.*"

Examples of implicit bias and mediated racism include poor service, suspicion, microaggressions, such as expressions of surprise at the competence of racial or ethnic minorities. Finally, internalized racism involves one's acceptance of inferiority to other racial groups based upon racial stereotypes or beliefs. Jones provides examples of internalized racism, such as assimilating to European cultural standards of beauty by dressing differently, lightening one's skin color, or manipulating ones' hair. Internalized racism may also manifest as the lower educational attainment or risky health behaviors of racial or ethnic minorities.

David Williams discusses the impact of the three levels of racism identified by Jones on the mental health of racial and ethnic minorities:

> "*First, racism in societal institutions can lead to truncated socioeconomic mobility, differential access to desirable resources, and poor living conditions that can adversely affect mental health. Second, experiences of discrimination can induce physiological and psychological reactions that can lead to adverse changes in mental health status. Third, in race-conscious societies, the acceptance of negative cultural stereotypes can lead to unfavorable self-evaluations that have deleterious effects on psychological well-being."*

To be clear, the inclusion of race in this dissertation study should not be viewed as a proxy for biological differences based on genetics. Researchers have long concluded that race is not genetically determined, but instead is based solely on sociopolitical constructs. Thus, the intersections of race and health inequity discussed in this study are the result of racism as a risk factor, and not race. Additionally, the race variable in this dissertation study is coded as a categorical variable based on self-reported race and ethnicity as defined by The Office of Management and Budget (OMB), which is utilized by both datasets in this study. The OMB standard for collecting information on race and ethnicity, established in 1997, is required and utilized by the U.S. Census Bureau (Bureau, n.d.-a). The U.S. Census Bureau makes clear that the race and ethnicity categories included in the census reflect social definitions of race recognized in the United States, and not biological, anthropological, or genetic classifications.

While self-reporting of multiple races is permitted, there are five primary categories that are required by OMB: Black/African American, American Indian/Alaska Native, Asian, White, and Native Hawaiian/Other Pacific Islander. According to the OMB standards, Black or African American refers to “a person having origins in any of the Black racial groups of Africa.” American Indian or Alaska Native refers to “a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.” A person is considered Asian if they have “origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including.” A White person is someone who has “origins in any of the original peoples of Europe, the Middle East, or North Africa” and a Native Hawaiian or other Pacific Islander has “origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.”

Enabling.

Researchers typically focus on enabling factors in health services research because such factors are malleable to health policy reforms. Two important enabling factors in this study are health insurance status and usual source of care. These are important factors to consider for healthcare utilization, especially in the United States where healthcare costs are high. In the quest to lessen health disparities, previous researchers have determined that having health insurance and a usual source of care are two of the strongest predictors of health services utilization (DeVoe et al, 2011, Callahan & Cooper, 2005, DeVoe et al, 2003, Bindman et al, 1996). Individuals who are either uninsured or unstably insured, lacking continuous health insurance coverage, are at risk of foregoing needed healthcare (Bovbjerg & Hadley, 2007; Schoen & DesRoches, 2000). While most non-elderly adults have private health insurance coverage, our nation's public health insurance programs are crucial sources of coverage. Individuals with health insurance coverage are more likely to have a usual source of healthcare. This dissertation study employs the definition of usual source of care utilized by AHRQ: "the particular medical professional, doctor's office, clinic, health center, or other place where a person would usually go if sick or in need of advice about his or her health." Having a usual source of care is a crucial component when measuring healthcare quality including the continuity of care, preventive care, and chronic disease management. It is one of the most widely utilized factors when examining healthcare access.

The percent of non-elderly adults without a usual source of care has declined from 2008-2018, indicating an improvement in the accessibility of healthcare (KFF, 2019). This statistic decreases as individuals age; elderly adults are the most likely to report a usual source of care, a fact which can be attributed in part to health insurance coverage. Having a usual source of care explains some of the variation in access to healthcare and healthcare spending (Phillips et. al., 2009). According to Phillips and colleagues, adults without a usual source of care had significantly lower healthcare spending and worse mental health status than those with a usual source of care.

Access measures including usual source of care and health insurance, such as Medicaid, may receive renewed attention given the financial insecurity experienced by millions of Americans grappling with the economic consequences of the coronavirus pandemic. Many have not only lost their jobs; they've also lost their employer-sponsored health insurance. Health insurance, and health outcomes, is associated with poverty (Hoffman & Paradise, 2008). Poverty level is an enabling factor connected to socioeconomic status and is utilized to determine an individual's access to adequate financial resources or wealth, for which poverty level is sometimes used as a proxy. It is well-established in the literature that low-income individuals are more likely to be uninsured (KFF, 2016; Feder et. al., 2001; Schoen & Puleo, 1998; Schoen, et. al., 1997; Rowland et. al., 1994; Davis & Rowland, 1983). Poverty is inextricably linked with employment status. Even when they are insured, low-income individuals may still suffer from a limited understanding of how to navigate cost-sharing requirements, such as cost-sharing premiums, deductibles, or copayments. Such challenges reveal how poverty prevents individuals from accessing needed healthcare due to costs (Tipirneni, et. al., 2018).

Further, low-income individuals who reside in rural areas tend to have limited geographic access to healthcare. Geographic access to healthcare is defined as "the absence of barriers including distance, transportation, and other physical challenges in accessing care when needed" (Primary Health Care Performance Initiative, 2018). According to the National Academy of Medicine (NAM), access to healthcare includes three distinct components: health insurance coverage, usual source of care, and geographic access (IOM, 1993). The federal government uses two major definitions of rural. The U.S. Census Bureau definition includes an overcount of the rural population. The OMB represents an undercount of the rural population. Because there are measurement challenges with both the Census and OMB definitions, the Federal Office of Rural Health Policy at the Health Resources Services Administration (HRSA) uses components of each definition when determining a classification for a geographic region. The FORHP along with the Economic Research Service at the U.S. Department of Agriculture (USDA-ERS) partnered to develop the Rural-Urban Commuting Area (RUCA) system, which is useful for detecting rural areas within metropolitan areas. This definition is used for my study.

Theory of Reasoned Action

I use the Theory of Reasoned Action to further guide the selection of factors to include in the empirical analyses (Figure 4.1). The Theory of Reasoned Action, including the related conceptual framework Theory of Planned Behavior, is a cognitive theory to understand human behavior (Ajzen, 1991, Ajzen, 1985, Ajzen & Fishbein, 1980, Fishbein & Ajzen, 1975). The theory has been used to explain, or even predict, health behaviors. I am mainly focused on subjective unmet need, or one’s motivation to seek mental healthcare and social pressure (stigma). The theory has been utilized in several studies focused on mental health treatment seeking (Bathje & Pryor, 2011, Altiere, 2009, Vogel et. al., 2007, Link & Phelan, 2001). According to Corrigan & Watson (2002), “public stigma is the reaction that the general population has to people with mental illness. Self-stigma is the prejudice which people with mental illness turn against themselves.” Corrigan and Watson further posit that public stigma and self-stigma can be described using three aspects:

stereotypes, prejudice, and discrimination (Figure 4.2). Stigma is a significant factor for mental health treatment seeking among racial and ethnic minorities, who may be more religious than other groups (Masci, 2018; Lukachko, Myer, & Hankerson, 2015; Chatters, et al. 2009; Taylor, Chatters, & Levin, 2003; Mattis & Jagers, 2001).

Subjective unmet need is important to note when examining psychological distress and realized access to mental healthcare. Many studies use self-reported health status as a proxy for someone’s motivation to seek care. Self-reported health status has been linked to increased mortality risk and increased use of health services (Novak, Anderson, & Chen, 2018; Williams, Di Nardo, & Verma, 2017; Garbarski, 2016; Boscardin, et, al. 2015). However, someone may believe their health status to be poor, yet still report that they do not need mental healthcare, or that it is socially unacceptable for them to seek or receive mental healthcare. Subjective unmet need, which is based on someone self-assessing and then reporting that they need treatment, may be a better proxy than self-reported health status. This has also been referred to in the literature as felt need or perceived need. Some researchers consider perceived need to be one of the greatest barriers to seeking mental healthcare (Mojtabai, Olfson, & Sampson, 2019). Additionally, other researchers have suggested using the Kessler 6 along with self-reported health status to improve screening properties (Schmitz, Lesage, & Wang, 2009).

Figure 4. Theory of Reasoned Action

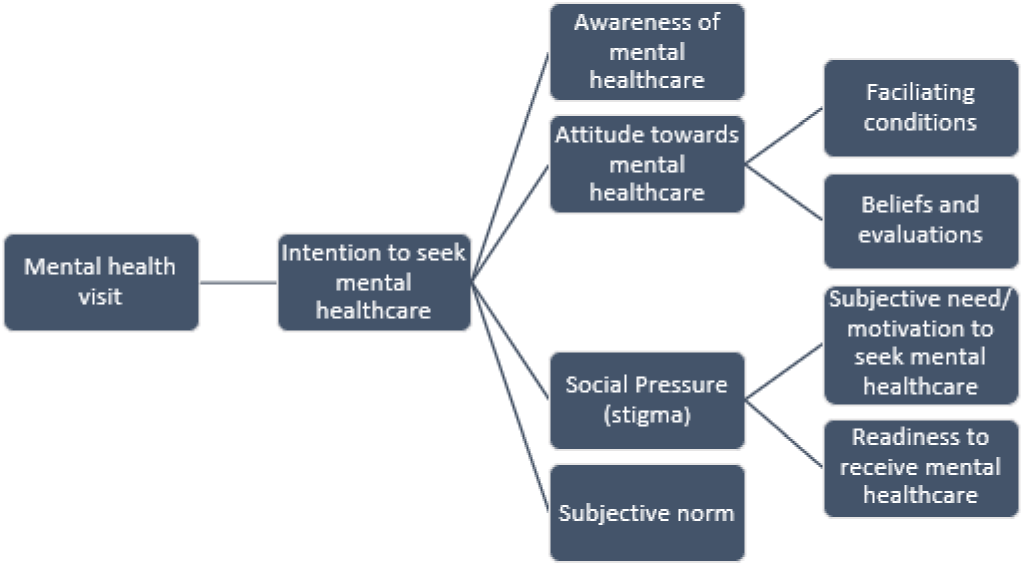
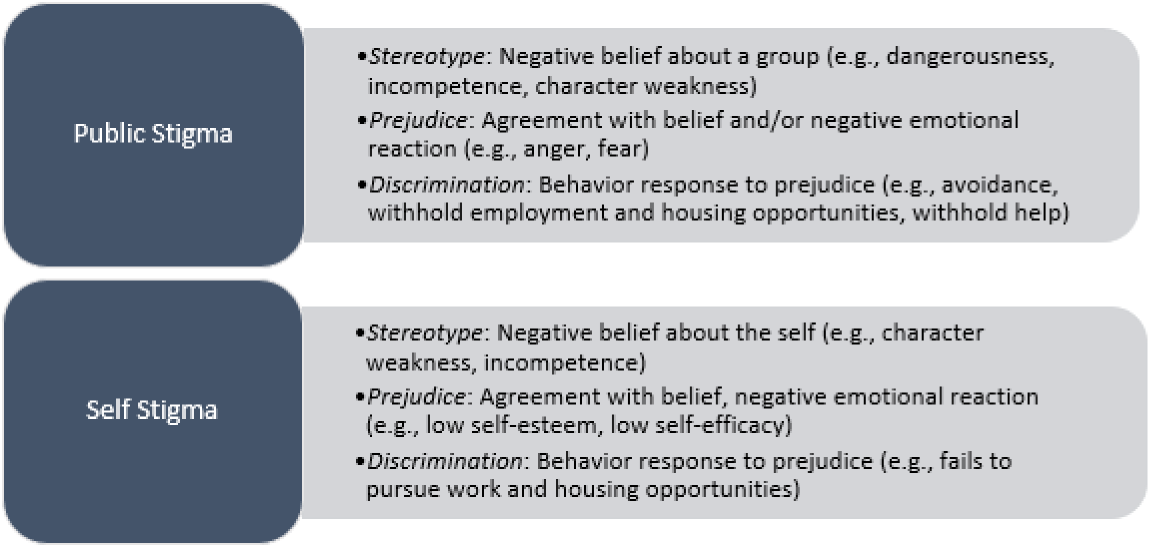


Figure 5. Public Stigma and Self-Stigma


Public Stigma

- *Stereotype*: Negative belief about a group (e.g., dangerousness, incompetence, character weakness)
- *Prejudice*: Agreement with belief and/or negative emotional reaction (e.g., anger, fear)
- *Discrimination*: Behavior response to prejudice (e.g., avoidance, withhold employment and housing opportunities, withhold help)

Self Stigma

- *Stereotype*: Negative belief about the self (e.g., character weakness, incompetence)
- *Prejudice*: Agreement with belief, negative emotional reaction (e.g., low self-esteem, low self-efficacy)
- *Discrimination*: Behavior response to prejudice (e.g., fails to pursue work and housing opportunities)

Dissertation Summary

Study 1 (Chapter 2) Characteristics of Adults with Moderate or Serious Psychological Distress and Subjective Unmet Need for Mental Healthcare

In my first study, I use California Health Interview Survey (CHIS) data and Medical Expenditure Panel Survey (MEPS) data from 2014 – 2018 to explore the characteristics of non-elderly adults by level of psychological distress. Specifically, among non-elderly adults with moderate or severe psychological distress, I examine the following characteristics: health insurance status, race/ethnicity, immigration status, usual source of care, sex, health status, age group, marital status, poverty level, educational attainment, employment status, and geographic location. What distinguishes the two datasets is subjective unmet need, or felt need, which is a self-reported or self-assessed measure of whether someone thinks they *need* care.

The results of this study suggest that, between 2014 - 2018, one in five (21%) Californians experienced moderate or serious psychological distress compared to 15% of Americans. I also find significant association between psychological distress, health insurance and lower income status, based on federal poverty indicators. This study provides evidence to support calls for policymakers to prioritize economic policies that reduce unemployment and decrease levels of psychological distress. Future research should estimate a model for mental healthcare utilization based on level of psychological distress.

Study 2 (Chapter 3) Estimating a Model for Mental Healthcare Utilization using Subjective Unmet Need and Psychological Distress

In my second study, I use California Health Interview Survey (CHIS) data from 2014 – 2018 to estimate the factors associated with realized access to mental healthcare using discrete data. Analyses are conducted using the 12-month visit to specialty or primary care for mental or emotional needs. Specifically, among non-elderly adults with moderate or serious psychological distress, I examine the following factors: age, sex, marital status, race/ethnicity, educational attainment, poverty level, health insurance status, usual source of care, rural, urban, subjective unmet need, cost, and stigma. Secondly, I fit various count data models based on visits to specialty or primary care for mental or emotional needs. What distinguishes this analysis is the inclusion of cost concerns and stigma concerns as factors.

The results of this study suggest that subjective unmet need is associated with need for mental healthcare, as 45% of individuals with moderate distress reported subjective unmet need while 75% of individuals with severe distress reported subjective unmet need for mental healthcare. Subjective unmet need is the most significant factor in whether someone reported a mental health visit. I also find that individuals with graduate degrees and individuals with a usual source of care were almost twice as likely to report mental healthcare utilization. Of the count data models, a negative binomial regression model was the best fit for the data, as 85% of the sample population did not utilize mental healthcare during the study period. Future research should consider barriers to accessing needed mental healthcare.

Study 3 (Chapter 4) A Rural-Urban Comparison of Barriers to Mental Healthcare Among Adults with Moderate or Serious Psychological Distress

In my third study, I use California Health Interview Survey (CHIS) data from 2014 – 2018 to examine rural adults' experiences of psychological distress and barriers to mental healthcare compared with the experience of urban adults to determine whether living in a rural area significantly predicts subjective unmet need for mental healthcare, access to mental healthcare, and perceived barriers to mental healthcare. For my response variables, I utilize various barriers to mental healthcare including health insurance, level of psychological distress, usual source of care, comfort discussing problems with provider, stigma concern, cost concern, inaccessibility due to a lack of health insurance coverage of mental healthcare, and the limited availability of mental healthcare providers in the area. Whether a respondent resides in a rural or urban area is included as a categorical predictor variable. I control for age group, race/ethnicity, educational attainment, employment status, marital status, poverty level, self-reported health status, and sex. The results of this study suggest that between 2014 – 2018 living in a rural area was a significant predictor of moderate psychological distress, but not severe psychological distress. Individuals experiencing severe psychological distress were 27 times as likely to report subjective unmet need for mental healthcare. Those with moderate levels of distress were 6 times as likely to report subjective unmet need. Rural residents were more likely to report that their health insurance did not cover mental health treatment and that they did not receive needed mental healthcare due to difficulty with scheduling an appointment. This barrier to mental healthcare, lack of health insurance coverage of mental health services, was reported by 13% of all individuals included in this study, both rural and urban residents. Future research should examine psychological distress among older adults in rural areas and include more comprehensive geospatial analyses on barriers to mental health services in rural populations.

Conclusion

My dissertation research focuses on psychological distress, a patient-reported outcome, and access to mental healthcare among non-elderly adults during one of the most significant time periods for health policy, the implementation of the Affordable Care Act. Findings suggest that health insurance remains a significant predictor of whether someone has access to needed healthcare. Further, this study highlights the need to examine moderate levels of distress in addition to severe psychological distress, as this population demonstrates the need for prevention and early intervention. However, findings suggest that the utilization of mental healthcare is extremely significant among individuals experiencing serious psychological distress. This is an important finding given that those with higher levels of distress are associated with disabilities that disrupt their daily living, including social and occupational activities. I hypothesized that individuals experiencing lower levels of distress, being more numerous, would be more likely to utilize mental healthcare. My dissertation suggests that even among individuals who reside in rural areas, non-elderly adults experiencing severe psychological distress have comparable levels of mental healthcare utilization. Future research should consider telemental healthcare including more targeted structural and financial barriers, such as internet services, that may limit access to needed mental healthcare among vulnerable populations.

Title:

Characteristics of Adults with Moderate or Severe Psychological Distress and Subjective Unmet Need for Mental Healthcare

Abstract:

Patient-reported outcome measures, such as psychological distress, are useful for developing more informed decisions surrounding mental health treatment including improving the quality of care and access to care. After the implementation of the Affordable Care Act (ACA), health insurance uptake increased among individuals experiencing severe psychological distress. While severe psychological distress has been widely studied, moderate distress and self-reported need have been less examined in the literature. Studying subjective unmet need, in addition to moderate and severe distress, can better inform prevention and early intervention efforts. The objective of this study is to explore the shared characteristics of individuals who are at risk for experiencing moderate or severe levels of psychological distress. Using 2014-2018 data for adults aged 18-64 in the California Health Interview Survey and Medical Expenditure Panel Survey (MEPS), I fit multinomial logistic regression models to examine between differences in level of psychological distress where the primary regressors are health insurance status, race/ethnicity, and subjective unmet need.

Introduction

Adults aged 18-64 experiencing severe psychological distress were more likely to be uninsured than adults without severe psychological distress (Weismann, et. al., 2015). After the implementation of the Affordable Care Act (ACA) in 2014, there was an uptake in health insurance coverage among these individuals because of the Medicaid Expansion provision included in the healthcare law (Novak, Anderson, & Chen, 2018; Wen, Druss, & Cummings, 2015). Information about the characteristics of this population may aide in mental health efforts focused on early intervention and treatment.

Psychological Distress

The Kessler Psychological Distress Scale (Kessler 10) is one of the most widely used patient-reported outcome measures. It has been translated into multiple languages and used by the World Health Organization. An abbreviated version of the measure, the Kessler 6 has been deemed by researchers as similarly reliable when assessing serious mental illness cases from non-cases (Kessler, et. al., 2002). The Kessler 6 scores respondents based on their self-assessment of sadness, nervousness, restlessness, hopelessness, worthlessness, and their determination that everything was an effort during the 30-day period prior to the assessment. The highest possible score is 24 and the lowest score is 0, based upon the sum of each individual score for every question in the assessment. An answer of ‘‘None of the time’’ is given a score of 0, while an answer of ‘‘all of the time’’ is given a score of 4. A score between 7 and 12 indicates moderate psychological distress and a score of 13 or greater indicates severe psychological distress. High levels of psychological distress are associated with severe mental health problems that cause significant disruptions in daily functioning and requires treatment (Wegener, et. al., 2011; Hardy, Woods, & Wall, 2003).

Background

Even low levels of psychological distress have been associated with emergency department use (Stockbridge, Wilson, & Pagan, 2014; Lin, Burgess, & Carey, 2012). Further, individuals with serious psychological distress are twice as likely to have heart disease or diabetes (Byles, et. al., 2013; Egede & Dismuke, 2012; Williams et. al., 2010; Rasul et. al., 2005). Mental health conditions are costly and highly debilitating (Vigo, Thornicroft, & Atun, 2016; Cloutier, et. al., 2016; Wang, Simon, & Kessler, 2006). Comparing national averages of moderate and severe psychological distress to the State of California can be used to better understand the need for mental healthcare among vulnerable populations, especially racial and ethnic minorities.

California is a paragon of mental health policy for the nation. As the largest state in the nation, there is progressive mental health legislation that has aided in expanded access to mental health services among individuals experiencing psychological distress, especially those who are Medicaid beneficiaries (Brown et. al., 2012; Snowden, et. al., 2006). The State of California expanded Medicaid extensively following the passage of the ACA. Further, California is home to a diverse population across racial and ethnic classifications. According to the American Community Survey, 39% of California residents identify as Latino, 36% are white, 15% are Asian, 6% are Black, fewer than 1% are Native American, and 3% are multiracial. Latinos have been the largest racial or ethnic group in the state since for almost a decade (ACS, 2019). Accordingly, California provides an excellent setting for analyses focused on health disparities. Currently, the Latino population is the largest minority group in the United States (US Census Bureau, 2019). In California, Latinos represent 39% of the population, while they represent approximately 19% of the U.S. population (ACS, 2019; US Census Bureau, 2019). Using Latinos as the referent group, this paper compares and evaluates the between-group demographic characteristics and health status factors associated with varying levels of psychological distress in California and the United States.

New Contribution

Subjective unmet need is someone reporting that they need treatment. This has also been referred to in the literature as felt need, or perceived need (Angrade, et. al., 2013; Mojtabai, et. al., 2010; Mojtabai, Olfson, & Mechanic, 2002). Despite the importance of subjective unmet need, many studies have only focused on clinical or evaluated need, which is based on the number and frequency of health-related symptoms reported to healthcare providers in the one year immediately preceding the date of reportage. While psychological distress may be considered subjective, it is also based on the number and frequency of mental health-related symptoms. This is important because there are individuals who don’t believe they need mental healthcare, yet still meet the criteria for moderate or serious psychological distress. There are also individuals who believe they need mental healthcare, but don’t meet the criteria for moderate or serious psychological distress. This study seeks to explore this incongruity. Specifically, it contributes to the existing literature by using data from a large, diverse sample of Californians compared to a large, representative U.S.

sample to examine subjective unmet need according to varying levels of psychological distress.

Methods

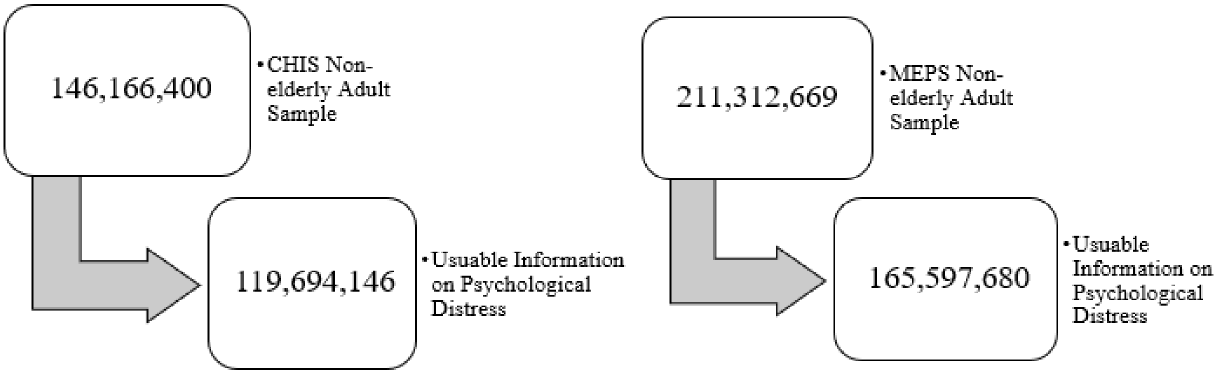
Data

To examine the characteristics of populations associated with varying levels of psychological distress across racial and ethnic groups, I analyzed data from the California Health Interview Survey (CHIS) and the Medical Expenditure Panel Survey (MEPS). Random digit dialing (RDD) of cellphones and landlines are utilized to identify respondents in California's civilian, non-institutionalized population for the CHIS. The CHIS provide population estimates for major racial and ethnic demographics and their health-related indicators. To capture the diversity of Californians in what is the largest state health survey in the United States, the CHIS is administered in multiple languages, including English, Spanish, Chinese, Korean, Vietnamese, and Tagalog. The MEPS is the most comprehensive survey on health insurance, health services utilization, and healthcare costs in the United States. While supplemental paper questionnaires are used periodically, the MEPS is provided via computer-assisted personal interviews (CAPI). This article uses CHIS data and MEPS data from 2014-2018, the period immediately following the implementation of the ACA. The analyses include all non-elderly adults, aged 18-64.

Sample

Non-elderly adults in the CHIS totaled about 146 million, while the sample population totaled 322 million in the MEPS. Millions of the remaining individuals did not have usable information on psychological distress, so they were omitted from the sample population. The final sample consists of 119 million non-elderly adults in the CHIS and 165 million in the MEPS (Chart 1).

Chart 1. Flow Diagram of Adults in the California Health Interview Survey and the Medical Expenditure Panel Survey, 2014-2018



Response Variable

To describe the respondents who experienced psychological distress I examined responses to the following questions: “About how often during the past 30 days did you feel nervous, hopeless, restless or fidgety, so depressed nothing could cheer you up, that everything was an effort, and worthless?” Respondents were asked to rate their feelings by selecting “all of the time, most of the time, some of the time, a little of the time, or none of the time.” The response variable was treated as trinary, with a value of 0 indicating that respondents experience low levels or no psychological distress, a value of 1 indicating moderate psychological distress, and a value of 2 indicating serious psychological distress. The items and scale utilized for the response variable is known as the Kessler Psychological Distress Scale (Kessler 6). The Kessler 6, which is an abbreviated version of the Kessler 10, has been tested for its reliability as a patient-reported outcome measure (PROM). A score of 13 or greater indicates serious or severe psychological distress. A score of 7-12 indicates moderate psychological distress.

Independent Variables

Health insurance status and race/ethnicity were the key independent variables in this study. Health insurance was categorized as uninsured, public health insurance, and private health insurance. The racial and ethnic groups included are Latino, Asian American, Black, Native American, White, and Multiracial. Multiracial, in this context, means individuals who selected two or more racial and ethnic group affiliations. Latinos are used as the referent group for the analyses using both datasets. When examining the MEPS data, Latinos had less odds of psychological distress when compared with non-Hispanic whites. According to Wolff and colleagues, "referent salience is important because subjective social status ratings by racial/ethnic group appear to be differentially sensitive to the referent group used in the comparison" (Wolff et al., 2010). Importantly, Latinos are the largest racial or ethnic group in California and are the largest minoritized group in the U.S. And, according to (Hardeman & Karbeah, 2020)

> *"Our methodologies also often replicate white supremacist framing by making whites the dominant group to which we compare all other populations. Researchers rarely question why whites are the dominant group within their research or even if white outcomes are a desirable standard for populations to strive toward. Considering within-group analyses or selecting a different comparison group may reveal new knowledge about the structural and social inequities at play."*

Of note, Hispanic is used to refer to individuals from Spanish-speaking countries. So, individuals of any racial group (i.e. white, Black, Asian, etc. may also self-identify as Hispanic). Hispanic is utilized in the MEPS, while both Hispanic and Latino are utilized by the CHIS. The OMB defines Hispanic or Latino as “a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race” ((Bureau, n.d.-b). Other variables are included that are commonly used throughout the literature in mental health services research such as sex, age, self-reported health status, marital status, employment status, educational attainment, poverty level, usual source of care, geographic location, and whether the respondent was born in the United States. Race and ethnicity were self-reported.

Health status and mental health status were both self-reported using a 5-item scale. The variable was recoded, so higher values are associated with worse health (1 = Excellent or Very Good, 2=Good, and 3=Fair or Poor). Marital status and employment status were treated as dummy variables. A respondent was considered married if they selected married. All other responses including widowed, separated, divorced, living with partner, and never married were coded as not married. A respondent was considered employed if they selected full-time employment, part-time employment, or other employed. A respondent was considered unemployed even if they reported looking for work. To examine the effect of different levels of education, the variable was recoded so higher values are associated with higher levels of educational attainment (1=High School Diploma or Less, 2=Some College, 3=College Degree, and 4=Graduate Degree). Usual source of care, born in the US, and living in a rural area were also treated as dummy variables.

Statistical Analysis

The analysis began using weighted descriptive statistics to examine psychological distress by various demographics. To examine the independent variables' effect on psychological distress level, a series of multinomial logistic regression models were utilized. After running a baseline model examining only race and ethnicity, an adjusted model was introduced to account for differences in health insurance status. Finally, to see whether the effect of race/ethnicity and health insurance on psychological distress remained, a full model was introduced with all covariates. To examine the association between race, insurance, and other explanatory variables on psychological distress within groups, separate logit models were performed for each racial/ ethnic group and subgroup. All results are weighted in STATA to account for the complex sample designs used by the CHIS and MEPS.

Results

Descriptive Statistics

Sex. In California, the sample population is divided evenly among men and women. However, men reported higher levels of both moderate and severe psychological distress. In the United States, sex is also divided evenly, but men had lower levels of distress. *Race/ Ethnicity.* Most of the individuals identified as Latino (41%) in California. However, white (38%), Asian American (15%), Black (6%), American Indian (<1%), and Multiracial (<1%) individuals are also included. The racial/ethnic group population was very different in the United States sample population. Latinos were only 17% of the population, while whites were 62% of the sample. Black (12%) and Asian (6%) were also included in the U.S. sample. *Age*. The average age in the

California sample is 40 years old, while the average age in the US sample is 41. *Immigration status*. California had over twice the percent of immigrants as the United States average during the study period with 35% of the California-based sample reporting they were born in a country other than the U.S. compared with 17% of the U.S. sample. *Education*. In California, 42% have a high school diploma or less, and 17% have taken some college courses, 31% have an undergraduate degree and 10% have a graduate degree. In the US, the overall sample population had higher levels of educational attainment with 51% reporting a high school diploma or less, 32% had taken some college courses and 17% reported earning a graduate degree. *Poverty Level*. More than 1 in 3 (36%) Californians were living in poverty or low-income compared to one in four (27%) in the U.S. population. *Employment Status*. 26% of the sample reported unemployment in California compared to the 21% nationwide average. *Health Insurance.* About 14% of the sample were uninsured in California and 11% were uninsured in the U.S. A higher percent of individuals, over one in three (34%), are covered under California's Medicaid program compared with only 15% covered by Medicaid in the U.S sample during the same period. And, while only 52% had private insurance in California, 74% reported private insurance in the U.S. sample population. *Health Status*. About half of the sample reported being in poor or fair health condition in California, while only 11% reported fair or poor health in the U.S. sample population. Table 1 presents the weighted demographics.

Table 1. Key Weighted Demographic Characteristics in the CHIS and the MEPS, 2014-2018

	California	**United States**
Sex		
Female	50%	51%
Male	50%	49%
Race/Ethnicity		
Latino	41%	17%
White	38%	62%
Black	6%	12%
Asian	15%	6%
Multiracial	<1%	3%
Native American	<1%	
Education		
High School Diploma or Less	42%	51%
Some College	17%	32%
College Degree	31%	
Graduate Degree	10%	17%
Poverty Level		
Poor or Low-Income	36%	27%
Middle Income	13%	29%
High Income	51%	44%
Employment		
Employed	74%	80%
Unemployed	26%	20%
Health Insurance		
Uninsured	14%	11%
Public	34%	15%
Private	52%	74%
Immigration Status		
Born In The U.S.	65%	83%
Not Born In The U.S.	35%	17%

Among the California population experiencing any psychological distress (24,506,529), a score of 11 on the Kessler 6 was the average; this was the same for the 22,229,841 individuals experiencing any psychological distress in the United States sample population. For those with moderate levels of psychological distress in California (18,933,782) and the U.S. (15,735,579) the average was a score of 9. In the 5,572,747 individuals who were experiencing severe levels of psychological distress, their average Kessler 6 score was 16. In the United States, 6,494,263 individuals experienced serious psychological distress and the average Kessler 6 score was also 16. The rate of uninsurance is higher in the California population than the U.S.

sample population. Additionally, public health insurance is higher in California, especially among individuals with moderate or severe psychological distress. The relationship between psychological distress and socioeconomic status (SES) was significant in the CHIS and MEPS. Poverty level, educational attainment, and employment status were used to determine SES.

Subjective unmet need, another variable of interest in this study, was reported by 24,008,286 Californians during the study period. During the same time, 24,506,529 Californians scored a 7 or above on the Kessler 6, indicating moderate or severe levels of psychological distress. The relationship between subjective unmet need and psychological distress was extremely significant in the CHIS. While most individuals with severe psychological distress indicated they need professional care for their mental or emotional needs, most individuals experiencing moderate levels of distress did not report subjective unmet need. Of note, 45% of individuals with moderate distress reported subjective unmet need while 75% of individuals with severe distress reported subjective unmet need for mental healthcare. While subjective, or felt need, was not included in the MEPS, individuals did report their perceived mental health status. The relationship between psychological distress and self-reported mental health was significant in the U.S. sample population when examining Pearson's chi-squared test results. Over half the individuals experiencing severe levels of distress reported fair or poor mental health status, and about one in four individuals with moderate psychological distress reported fair or poor mental health status. Table 2 presents the weighted demographics by psychological distress level.

Table 2. Weighted Demographic Characteristics by Psychological Distress Level in the CHIS and the MEPS, 2014-2018

	No/ Low California n = 95,187,617	No/ Low United States n = 143,367,839	Moderate California n = 18,933,782	Moderate United States n = 15,735,579	Serious California n = 5,572,747	Serious United States n = 6,494,263
Race/Ethnicity						
Latino	40%	18%	45%	14%	47%	15%
White	38%	61%	35%	64%	35%	65%
Black	5%	12%	6%	12%	6%	12%
Asian	15%	6%	13%	5%	11%	3%
Native American	<1%	3%	<1%	5%	<1%	5%
Multiracial	<1%		<1%		<1%	
Education						
High School	41%	50%	47%	54%	53%	61%
Some College	16%	32%	18%	32%	22%	31%
College Degree	33%		28%		22%	
Graduate Degree	10%	18%	7%	14%	3%	8%
Poverty Level						
Poor	15%	10%	24%	21%	33%	34%
Low Income	18%	14%	22%	20%	26%	25%
Middle Income	13%	29%	14%	27%	14%	22%
High Income	54%	47%	40%	32%	27%	19%
Employment Status						
Employed	77%	83%	69%	66%	49%	44%
Unemployed	33%	17%	31%	34%	51%	66%
Health Insurance						
Uninsured	13%	11%	17%	11%	16%	11%
Public	31%	12%	44%	28%	56%	47%
Private	56%	77%	39%	61%	28%	42%
Immigration Status						
Born in US	65%	82%	69%	87%	72%	90%
Not Born in US	35%	18%	31%	13%	28%	10%
Health Status						
Excellent or Very Good	15%	67%	33%	34%	57%	19%
Good	31%	26%	34%	36%	26%	28%
Fair or Poor	54%	7%	33%	30%	18%	53%
Location						
Rural	6%		5%		7%	
Urban	94%		95%		93%	
Subjective Unmet Need						
Yes	12%	3%	45%	25%	75%	57%
No	88%	97%	55%	75%	25%	43%

Multivariate Logistic Regression Models

Table 3 provides a series of logistic regression models examining which factors are associated with psychological distress in California. Table 4 provides a series of logistic regression models examining which factors are associated with psychological distress in the United States. The baseline model shows the association between psychological distress and race/ethnicity. Race/ethnic group did not have a statistically significant effect when including all covariates. Model II controls for health insurance status. There are significant differences in level of psychological distress by health insurance status, employment status, and subjective unmet need. Non-elderly adults with public health insurance in both the US and California were more likely to experience serious psychological distress before controls. This model demonstrates that associations between psychological distress and health insurance remain statistically significant, but are diminished in magnitude, after adjusting for other factors. Model III controls for additional covariates. After adjusting for these factors, the effect of race on psychological distress increased and remained significant among Asian Americans.

Table 3. Models of Psychological Distress in Non-Elderly Adults in California, 2014-2018

Variable	**Model I moderate distress**	**Model I serious distress**	**Model II moderate distress**	**Model II serious distress**	**Model III moderate distress**	**Model III serious distress**
Race/Ethnicity						
Latino*						
White	.819**	.777**	.968	1.02	1.06	1.02
Black	.911	.938	.960	1.01	.994	.992
Asian	.764**	.592**	.871	.728	1.18**	1.33
Native American	1.19	1.40	1.16	1.32	1.11	.900
Multiracial	.929	1.38	1.02	1.59	1.21	1.67
Health Insurance						
Uninsured*						
Public			1.18**	1.51**	1.06	1.05
Private			.571**	.414**	.748**	.671**
Usual Source of Care						
No*						
Yes					1.13	1.41**
Sex						
Female*						
Male					1.12**	1.07
Immigration						
Not Born in US*						
Born in US					1.06	1.10
Self-Reported Health Status						
Excellent or Very Good*						
Good					.509**	.267**
Fair or Poor					.295**	.121**
Location						
Urban*						
Rural					.892	1.04
Subjective Unmet Need						
No*						
Yes					6.29**	25.17**
Marital Status						
Unmarried*						
Married*					.709**	.548**
Poverty Level						
Poor*						
Low Income					.928	.947
Middle Income					.866	.857
High Income					.791**	.628**
Employment						
Unemployed*						
Employed					.872	.505**

*Referent group **p-value significant (<0.05)

It is important to note that many other factors were associated with psychological distress. Subjective unmet need was the most significant factor across groups. The magnitude of this effect was large. On average, those who reported subjective unmet need were more likely to experience moderate psychological distress and more likely to experience severe psychological distress. Lower levels of income, based on federal poverty indicators, increased the risk of psychological distress. Individuals with high income were at the least risk for both moderate and severe psychological distress; the relationship was significant. The effect of immigration status was significant in the U.S. sample. Individuals who reported being born in the United States were almost twice as likely as immigrants to have serious psychological distress.

Table 4. Models of Psychological Distress in Non-Elderly Adults in the United States, 2014-2018

Variable	Model I moderate distress	Model I serious distress	Model II moderate distress	Model II serious distress	Model III moderate distress	Model III serious distress
Race/Ethnicity						
Latino*						
White	1.34**	1.26**	1.61**	1.80**	1.53**	1.45**
Black	1.27**	1.14	1.25**	1.10	1.09	.811**
Asian	1.12	.57**	1.31**	.780	1.79**	1.36**
Multiracial	1.97**	1.94**	2.06**	2.10**	1.74**	1.47**
Health Insurance						
Uninsured*						
Public			2.28**	3.68**	1.28**	1.45**
Private			.717**	.469**	.908	.834
Usual Source of Care						
Yes					1.17**	1.09
No*						
Sex						
Female*						
Male					.837**	.768**
Immigration Status						
Born in the US					1.38**	1.68**
Not Born in the US*						
Self-Reported Health Status						
Excellent or Very Good					.419**	.325**
Good					.540**	.429**
Fair or Poor*						
Location						
Northeast*						
Midwest					1.04	1.16
South					1.09	1.12
West					1.25**	1.39**
Self-Reported Mental Health Status						
Excellent or Very Good					.094**	.029**
Good					.311**	.116**
Fair or Poor*						
Poverty Level						
Poor*						
Low Income					.903**	.869
Middle Income					.775**	.640**
High Income					.682**	.499**
Employment						
Employed					.750**	.479**
Unemployed*						

*Referent group **p-value significant (<0.05)

Discussion

This article describes the characteristics associated with varying levels of psychological distress. The data reveal that: 1) Socioeconomic status is a better predictor of psychological distress than racial/ ethnic group membership; 2) Health insurance status is significantly associated with psychological distress; 3) After implementing controls, the effect of race/ethnic group membership remains strong, but only among certain racial and ethnic groups (i.e. Asian Americans) in both the U.S. and California sample populations. While insurance status is significant in this study, along with socioeconomic status, it's important to note that insurance status is connected to employment (Enthoven & Fuchs, 2006; Gumus & Regan, 2015; Hyman & Hall, 2001). And, even when racial and ethnic minorities are employed, they may still not have employer-sponsored insurance or private insurance; this may be attributed to the type of job and even immigration status (E. R. Brown et al., 2000; *Employer-Sponsored Health Insurance*, n.d.), as the relationship between psychological distress and socioeconomic status was extremely significant in Californians.

The initial purpose of this study was to explore how a representative sample of the California aligned with a representative sample of the US regarding the drivers of mental health outcomes so generalizations could be made about unmet need for mental healthcare in the US based on California data. Based on the results of this study, the drivers of unmet need for mental healthcare in California, using CHIS data, are different than the US, using MEPS data. This suggests that California is unique in terms of their overall population demographics and social conditions (e.g., mental health policy, programmatic interventions, socioeconomic status). While Latinos are the majority racial/ethnic group in the CHIS, Whites are the majority in the MEPS. This could explain some of the variation in levels of psychological distress among Californians compared to a representative sample of Latinos in the overall US population. Previous research on Latinos in the State of California revealed significant differences in psychological distress, subjective unmet need, and mental health visits for mental or emotional needs among undocumented Latinos compared to US-born Latinos (Ortega et al., 2018). However, California has statewide health policy that promotes early intervention practices among populations experiencing psychological distress. These efforts reach vulnerable populations including racial and ethnic minorities by expanding access to mental health services and supports training programs for clinicians providing mental health treatment.

In the MEPS, individuals who identified with multiple races were coded as "Other". Also, anyone who did not report Black, Latino, White, or Asian were coded as Other. As a result, Native Americans are likely included in the Other category. Nationally representative surveys should consider better sampling and coding methodology to appropriately capture the racial/ethnic diversity of the United States. There are more than double the number of immigrants in California as compared to the rest of the US population, 35% compared to 17%. Individuals born in the United States were almost twice as likely to have severe psychological distress. This may be attributed to language and cultural barriers that are heightened when immigrants interact with the U.S. healthcare system. This has significant implications for immigrant health and should be a focus area of future research, especially as the U.S.

population continues to grow and diversify over the next few decades. Previous research on immigrants residing in California, during a similar period, indicate that there may be a need for better access and utilization to mental health services and other behavioral health services, especially among those who are undocumented (Ortega, et. al., 2018). The representative sample of the U.S. population in this study also had higher levels of educational attainment than the California sample population. California also had a higher rate of unemployment during the study period, which is consistent with previous findings that these inequities are associated with high levels of distress (Padilla-Frausto et al., 2018). One in four non-elderly adults in the United States were low-income or impoverished, while over one in three were living in poverty or low-income in California. Social policies and programmatic interventions in California could inform U.S. mental health policy efforts.

The findings in this study are consistent with prior research on mental health among Asian Americans. According to Frausto and colleagues, Asians had a greater increase in serious psychological distress than any other racial/ethnic group in California between 2014-2018 (Padilla-Frausto et al., 2018). This study provides evidence to support the need for additional mental health services supports, especially important given the on-going COVID-19 pandemic and the associated hate crimes and racial discrimination that Asian Americans have experienced due to the origins of the coronavirus (*Anti-Asian Xenophobia and Asian American COVID-19 Disparities | AJPH | Vol. 110 Issue 9*, n.d.; Chen et al., 2020; Tessler et al., 2020; Wang et al., 2020). As evidenced in the literature, even perceived discrimination based on racial/ethnic group affiliation leads to poor mental health outcomes (R. C. Kessler et al., 1999; Todorova et al., 2010).

Limitations

This study is limited primarily by the restriction of the sample population to include only non-elderly adults. Another limitation is that the CHIS is cross-sectional data, while the MEPS is panel data. Cross-sectional data doesn’t allow for an examination of how various factors affect psychological distress levels over time. Therefore, the ability to assert causality is limited. Third, the data analyses relied primarily on the patient-reported outcome measure, the Kessler Psychological Distress Scale. Previous research suggested “inconsistent evidence for the K6/K10's cultural appropriateness in clinical settings” (Stolk et al., 2014). There is evidence to suggest that translating the Kessler Psychological Distress Scale (K6) into other languages, besides English, yields different results when compared with results using the English version of the survey in the same study population (Jang, et. al., 2018). Because the CHIS is conducted in several Asian languages, the K6 is likely to demonstrate “that its translated expression in Asian languages may carry less associations with illness/disorder than the English word, thereby making it easy to endorse among Asian language survey users.” Jang and colleagues suggest researchers exercise caution in “cross-linguistic” contexts due to a lack of equivalence in measuring the K6 in English compared with Asian languages. Additionally, future research should consider the effects of perceived discrimination, racism, and microaggressions on the individual’s self-perception and experience of psychological distress, especially between and within racial/ethnic groups.

Further, neither dataset utilized for this study included incarcerated or institutionalized adults. The questionnaires did not include questions about history of incarceration or institutionalization. The prison population is predominantly racial and ethnic minorities. This is a unique factor that may contribute to high levels of distress. These individuals endure trauma having confronted the structural racism at the very foundation of our criminal justice system. Additionally, this may cause distress among individuals with an immediate family member who is incarcerated on institutionalized. Conversely, persons experiencing homelessness or unhoused persons may experience high levels of distress, and their family may experience related psychological distress. Previous research indicates “optimal use of public mental services may be achieved by developing and implementing interventions that address the issues of homelessness” (Lindamer et al., 2012). These factors that are prevalent in racial and ethnic minority communities should strongly be considered in future research focused on describing the burden of psychological distress in vulnerable populations.

Conclusion

This article described the characteristics associated with psychological distress based on health insurance status and racial/ ethnic group affiliation in the United States. The findings suggest that future public health research and interventions should focus on socioeconomic status within racial and ethnic subgroups to better understand differences in levels of psychological distress. This study contributes to the evidence that emphasizes the need for policymakers to consider social policies to decrease rates of unemployment, low levels of educational attainment, and poverty. Future research should build on this work by examining psychological distress using qualitative methods or perhaps a mixed methods approach. Additionally, longitudinal data that examines psychological distress within a different age range (e.g. all adults or elderly adults) can inform policy and practice about how racial/ethnic group membership impacts psychological distress levels over time.

Title:

Estimating a Model for Mental Healthcare Utilization using Subjective Unmet Need and Psychological Distress Measures

Abstract:

Patient-reported outcome measures, such as psychological distress, are commonly used to evaluate healthcare utilization patterns. Moreover, the Kessler-6 screener for psychological distress is frequently used as a tool for determining whether someone’s level of distress merits evaluation by a healthcare professional. Serious psychological distress has been widely studied as a predictor of higher healthcare expenditures and use; however, moderate distress and self-reported need have been less examined in the literature. Studying subjective unmet need, in addition to moderate and serious distress, may provide additional understanding of the need for mental healthcare and mental healthcare utilization. The objective of this study is to assess the predictive value of self-reported need and psychological distress in mental healthcare service use across racial and ethnic groups in California. Using 2014-2018 data for adults aged 18-64 in the California Health Interview Survey, I fit a Poisson model, finding that subjective unmet need was the most significant predictor of having at least one healthcare visit for mental or emotional needs. Furthermore, moderate psychological distress was a better predictor of mental healthcare utilization than serious psychological distress. More research is needed to determine how to ensure that individuals reporting subjective unmet need for mental healthcare can access services.

Introduction

Disparities in healthcare utilization is well documented. Subjective unmet need or motivation to seek mental healthcare is important to consider when examining psychological distress and mental healthcare utilization. Many studies use self-reported health status as a proxy for someone's motivation to seek care, as self-reported health status has been linked to increased mortality risk and increased use of health services (Boscardin et al., 2015; Garbarski, 2016; Novak et al., 2018; G. Williams et al., 2017). However, someone may believe their health status to be poor, but may also report that they do not need mental healthcare or that it is socially unacceptable for them to seek/receive mental healthcare. Subjective unmet need, which is based on someone reporting that they need mental health treatment, may be a better proxy than self-reported health status. This has also been referred to in the literature as felt need or perceived need. Some researchers consider perceived need to be one of the greatest barriers to seeking mental healthcare (Mojtabai et al., 2011).

Individuals with high levels of psychological distress may experience less access to mental healthcare due to their health insurance status and racial/ethnic group affiliation. Following the passage of the Patient Protection and Affordable Care Act (ACA), health services researchers identified an uptake in health insurance among individuals experiencing serious psychological distress (Novak et al., 2018). There is continued interest in individuals with psychological distress because of the ACA, which allowed states to expand Medicaid eligibility to include nonelderly adults, ages 19-64 years old, with incomes of up to 138 percent of the federal poverty level (Gonzales et al., 2017). And while much of the literature focuses on serious psychological distress, even low levels have been associated with emergency department utilization (Lin et al., 2012; Stockbridge et al., 2014). Previous studies demonstrate that in some cases, psychological distress indicates major depression, an anxiety disorder, or other serious mental illnesses ((*Characteristics of Adults with Serious Psychological Distress as Measured by the K6 Scale, United States, 2001-04*, n.d.). Mental health conditions can be well-managed if there's early intervention and treatment.

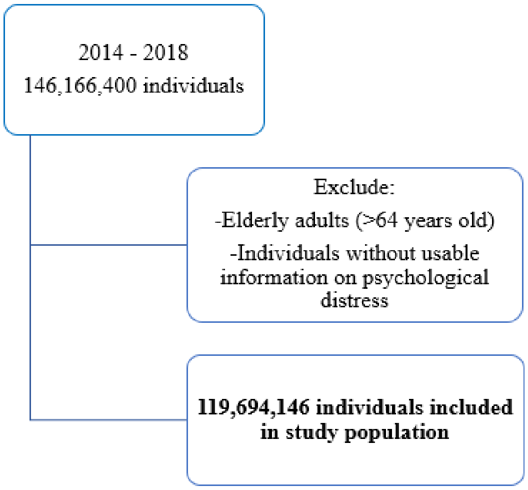
In California, a state that expanded Medicaid following the ACA, there has been progressive mental health legislation to improve mental health services, reduce barriers to accessing mental health services, and promote prevention, early intervention, and training (Department of Health Care Services, 2020). Of the 39.5 million Californians, 13% are experiencing psychological distress -- 1.7 million California adults have serious psychological distress and 1.3 million have symptoms associated with moderate psychological distress (Padilla-Frausto et al., 2018). Unmet need for mental healthcare among adults with psychological distress varies significantly between racial/ethnic groups based on citizenship, proficiency in English, and family type (Padilla-Frausto et al., 2018).Currently, only 29% of need is met in California. As a result, California is designated as a Mental Health Care Health Professional Shortage Area (KFF, 2020). This study's findings could inform mental health policy focused on early intervention and treatment.

Methods

Data and Variables

This study used datasets of the California Health Interview Survey (CHIS) from 2014 to 2018. The CHIS is a representative sample of the California, non-institutionalized population conducted by the Center for Health Policy Research at the University of California Los Angeles (UCLA). The CHIS contain comprehensive information on individuals' demographics and socioeconomic characteristics. More than 20,000 Californians are interviewed each year; making it the largest state health survey in the US. The CHIS is conducted via telephone using random digit dialing (RDD) of cellphones and landlines. Respondents are asked about access to healthcare, health insurance status, health conditions, and other health-related items. The CHIS has been conducted since 2001, annually beginning in 2011. Individuals are contacted via mail in advance of interviews and there are multiple follow-ups to assure completion of the survey. However, adults who complete at least 80% of the survey are designated as "complete." This pooled dataset yielded a final sample of 119,694,146 non-elderly adults, aged 18–64 years old.

Chart 1. California Health Interview Survey (CHIS) Study Population



Subjective Unmet Need

To assess subjective unmet need or felt need, the CHIS asks respondents "Was there ever a time during the past 12 months when you *felt* that you might need to see a professional because of problems with your mental health, emotions or nerves or your use of alcohol or drugs?" A follow-up question, "Did you seek help for your mental or emotional health OR for an alcohol or drug problem" allowed me to analyze only those who sought help for mental or emotional health.

Data Analysis

First, descriptive analysis is conducted to examine racial/ethnic differences in demographic characteristics. Second, regression analysis is conducted testing a Poisson regression model, a negative binomial regression model, and a zero-inflated model to estimate the factors associated with mental health visits using the CHIS question: "In the past 12 months, how many visits did you make to a professional for problems with your {mental or emotional health/use of alcohol or drugs/mental or emotional health and your use of alcohol or drugs}?" This measure does not include overnight hospital stays. There is a follow-up item that asks respondents "Did you seek help for your mental or emotional health OR for an alcohol or drug problem?" In this way, I include both primary care and specialty care visits for mental health and exclude visits that were for an alcohol or drug problem. The primary regressors are psychological distress and subjective unmet need. I include the following factors as covariates: racial/ethnic group, age, sex, marital status, race/ethnicity, educational attainment, poverty level, health insurance status, usual source of care, language, geographic location, cost, and stigma.

Results

Demographic Characteristics

Sex. The sample population is divided evenly among men and women and men have comparable levels of moderate psychological distress. However, 55% of individuals with serious psychological distress were women and 45% were men. *Race/ Ethnicity*. Most of the individuals identified as Latino (41%). However, white (38%), Asian American (15%), Black (6%), American Indian (<1%), and Multiracial (<1%) individuals are also included. *Age*. The average age in the sample is 40 years old. *Marital status*. Almost half (47%) of the sample population are married. *Immigration status*. 35% of the sample are immigrants. *Education*. 42% have a high school diploma or less, and 17% have taken some college courses, 31% have an undergraduate degree and 10% have a graduate degree. *Poverty Level*. 1 in 3 (37%) of the sample are living in poverty or low-income. 13% are middle income and 51% are high income. *Employment Status*. 26% of the sample are unemployed. *Health Insurance.* About 14% of the sample are uninsured. 34% have public insurance and 52% have private insurance. *Usual Source of Care*. Most of the sample (83%) have a usual source of care. *Geographic Location.* 94% of the sample reside in urban areas, while 6% of the sample live in rural areas. *Health Status*. About half of the sample reported being in poor or fair health condition. Table 1 presents differences in level of psychological distress based on these demographic characteristics.

Table 1. Level of Psychological Distress and Demographic Characteristics of Adults in California, 2014-2018

Variable	**No/ Low Psychological Distress n = 95,187,617**	**Moderate Psychological Distress n = 18,933,782**	**Serious Psychological Distress n = 5,572,747**
Sex			
Female	50%	51%	55%
Male	50%	49%	45%
Race/Ethnicity			
Latino	40%	45%	47%
White	38%	35%	35%
Black	6%	6%	6%
Asian	15%	13%	11%
Native American	<1%	<1%	<1%
Multiracial	<1%	<1%	<1%
Marital Status			
Married	51%	33%	25%
Unmarried	49%	67%	75%
Education			
High School Diploma or Less	41%	47%	53%
Some College	16%	18%	22%
College Degree	32%	28%	22%
Graduate Degree	11%	7%	3%
Poverty Level			
Poor	15%	24%	33%
Low Income	18%	22%	26%
Middle Income	13%	14%	14%
High Income	54%	40%	27%
Employment			
Employed	77%	69%	49%
Unemployed	23%	31%	51%
Health Insurance			
Uninsured	13%	17%	16%
Public	31%	44%	56%
Private	56%	39%	28%
Immigration Status			
Born in the US	65%	66%	72%
Not Born in the US	35%	34%	28%
Self-Reported Health Status			
Excellent or Very Good	15%	33%	57%
Good	31%	34%	26%
Fair or Poor	54%	33%	18%
Location			
Rural	6%	5%	7%
Urban	94%	95%	93%
Subjective Unmet Need			
Yes	12%	45%	75%
No	88%	55%	25%

Subjective Unmet Need and Psychological Distress

One in five (21%) individuals in the sample population were determined to have moderate or serious psychological distress. Sixteen percent of all individuals had moderate psychological distress while only 5% had serious psychological distress. Subjective unmet need, whether someone “felt the need to see a professional for mental or emotional needs” was reported by one in five (20%) individuals in the sample population. Of note, 72% of individuals with moderate psychological distress felt like they needed to see a professional for their mental or emotional needs compared to 4% of individuals with serious psychological distress. Pearson’s chi-square test indicated a statistically significant (p-value 0.00) association between subjective unmet need and psychological distress. When calculating the average level of psychological distress by subjective unmet need, the results indicate individuals with moderate levels of distress, specifically with a score of 8 on the Kessler 6, tend to report the need to visit a professional for mental or emotional needs. The majority (58%) of individuals who reported subjective unmet need were women. Table 2 presents subjective unmet need and demographic characteristics.

Table 2. Subjective Unmet Need and Demographic Characteristics of Adults in California, 2014-2018

Variable	Subjective Unmet Need n = 24,008,286
Sex	
Female	58%
Male	42%
Race/Ethnicity	
Latino	38%
White	47%
Black	6%
Asian	9%
Native American	<1%
Multiracial	<1%
Marital Status	
Married	34%
Unmarried	66%
Education	
High School Diploma or Less	36%
Some College	20%
College Degree	34%
Graduate Degree	11%
Poverty Level	
Poor	19%
Low Income	18%
Middle Income	13%
High Income	50%
Employment	
Employed	69%
Unemployed	31%
Health Insurance	
Uninsured	11%
Public	39%
Private	49%
Immigration Status	
Born in the US	81%
Not Born in the US	19%
Self-Reported Health Status	
Excellent or Very Good	28%
Good	31%
Fair or Poor	41%
Location	
Rural	36%
Urban	64%

Mental Healthcare Utilization

Individuals with moderate psychological distress had 34% of all healthcare visits for mental or emotional needs during the study period, compared to 17% for those with serious psychological distress. Almost half of all mental health visits were from individuals with low psychological distress. Subjective unmet need for mental healthcare was reported by 77% of those who utilized mental healthcare during the study period. Individuals who did not report they were “concerned about what would happen if someone found out they had a problem as the reasons they did not seek help from a professional even when they think they might need it”, were almost 7 times as likely to have a mental healthcare visit. Individuals who did not report that they were concerned about the cost of treatment were almost 6 times as likely to report mental healthcare utilization. Finally, the remaining most significant factor was level of psychological distress. Individuals with serious psychological distress were 3 times as likely to report a visit than those with low levels (<7 on the Kessler 6) of psychological distress and individuals with moderate psychological distress were twice as likely to report a visit than individuals with lower levels of distress. Health insurance status, poverty level, and educational attainment were not significant factors. Employment status, immigration status, usual source of care, self-reported health status, and certain racial/ethnic groups were significant. Table 3 presents the results of the logistic regression model. While the regression model proved to be a good fit for the discrete data based on a 0.62 when using the post estimation command *estat gof*, 85% of the sample population did not utilize mental healthcare.

Table 3. Binary Data Model of Mental Health Visits using the California Health Interview Survey, 2014-2018

	Healthcare Visit for Mental or Emotional Needs (OR)
Moderate Psychological Distress	2.32**
Serious Psychological Distress	2.82**
Subjective Unmet Need	71.25**
Cost	5.63**
Stigma	6.64**
Health Insurance	
Uninsured*	
Public	1.09
Private	1.04
Race/Ethnicity	
Latino*	
White	1.39**
Black	1.12
Asian	.739**
Native American	2.44
Multiracial	2.69
Immigration Status	
Born in the US	.813**
Not Born in the US*	
Usual Source of Care	1.70**
Sex	
Female	.645**
Male*	
Self-Reported Health Status	
Excellent or Very Good*	
Good	.824**
Fair or Poor	.805**
Married	.799**
Poverty	
Poor*	
Low Income	.839
Middle Income	.792
High Income	.918
Education	
High School Diploma or Less*	
Some College	1.09
College Degree	1.18
Graduate Degree	1.27
Employed	.709**
Rural	.882

*Referent group **p-value (<.05) OR = odds ratio

The primary question of interest, *how many* healthcare visits did individuals make for their mental or emotional needs, was estimated using count data models. The first model, a Poisson model was not a good fit for the data based on the post estimation command *poisgof*. Moderate and serious psychological distress were the only significant predictors in the model in addition to residing in a rural area. Subjective unmet need was also significant in model two, the zero-inflated Poisson (ZIP) model. Of note, immigration status was only significant in this model. Sex was not significant in any of the models. Importantly, concerns associated with costs for mental healthcare or any stigma associated with utilizing mental healthcare were not significant in any of the models. Table 4 presents the results for both count data models.

Table 4. Count Data Models of Mental Health Visits in the California Health Interview Survey, 2014-2018

	Model I **Poisson Regression** **(IRR)**	**Model II** **Zero-inflated Poisson Regression** **(IRR)**
Moderate Psychological Distress	1.28**	1.33**
Serious Psychological Distress	1.39**	1.51**
Subjective Unmet Need	1.29	-.432**
Cost	.996	.963
Stigma	.904	.917
Health Insurance		
Uninsured*		
Public	1.26	.109
Private	1.06	-.432
Race/Ethnicity		
Latino*		
White	1.16	1.16
Black	1.01	1.03
Asian	.895	.848
Native American	1.27	1.18
Multiracial	1.02	.828
Immigration Status		
Born in the US	.817	.836**
Not Born in the US*		
Usual Source of Care	.936	.938
Sex		
Female	.931	.941
Male*		
Self-Reported Health Status		
Excellent or Very Good*		
Good	.991	.974
Fair or Poor	1.04	1.00
Married	.853	.805**
Poverty		
Poor*		
Low Income	1.11	1.07
Middle Income	1.22	1.17
High Income	1.07	1.00
Education		
High School Diploma*		
Some College	1.02	1.02
College Degree	1.05	1.05
Graduate Degree	1.09	1.06
Employed	.829	.816
Rural	.694**	-.195

*Referent group **p-value (<.05) IRR = incidence risk ratio

Discussion

These findings have significant implications for mental health services research, as much of the literature focuses exclusively on serious psychological distress with little regard to lower levels of distress. Moderate psychological distress had a similar predictive value to serious psychological distress in all models tested. Those who may present with only moderate psychological distress symptoms to their primary care provider may not score high enough on the scale to qualify for a referral to a mental health specialist for treatment. However, if these individuals feel like they need to receive care for their mental or emotional needs, they are much more likely to initiate a mental health visit. This could explain the high likelihood of initiating a visit for mental or emotional need among those experiencing moderate psychological distress.

In line with previous research, women have higher levels of psychological distress than men, although sex was not a significant factor in mental healthcare utilization (FERRARO & NURIDDIN, 2006; Ritsner et al., 2001). However, the results should be considered with the following limitations in mind. First, the sample was restricted to the State of California. This may limit the generalizability of study findings to states with less diverse populations. Second, CHIS data is cross-sectional, so the ability to conduct a longitudinal examination of psychological distress levels and mental healthcare visits over time was not explored. Therefore, the ability to infer causality is limited. Finally, although predisposing, enabling, and need factors related to mental healthcare utilization are used as controls, potentially significant factors related to healthcare access were not included. Future work should consider the effects of geography, health outcomes related to residing in a rural or urban area, and barriers to accessing mental healthcare.

Further, factors related to individual preference for healthcare are included in this study. Previous studies focused on measuring health disparities have discussed the need to account for individual preference for professional healthcare (Cook et al., 2012, 2016; McGuire et al., 2006). Therefore, self-reported health status and stigma are utilized as a representation of preference. These variables provide invaluable insight about individual "preference" for care. It's important to note that there are people who meet the criteria for a disorder and do not seek services from a mental health professional. They may not be sufficiently distressed or disabled to seek treatment, and some who are distressed or disabled will choose not to seek help. Additionally, there are people with low levels of psychological distress who still seek treatment for mental health problems. So, they may not meet the criteria for moderate or severe psychological distress because they are well-managed with current mental health treatment.

Conclusion

Future policies should consider access to mental healthcare among vulnerable populations, including the elderly, the incarcerated, and historically marginalized populations. Data collection efforts, especially survey research, should consider additional measures such as childhood health or adverse childhood experiences, previous incarceration history, and having a family member who is either incarcerated or unhoused. Patients may also report factors such as not having time for mental health treatment, childcare needs, or transportation needs. These are enabling services, which may increase access to mental healthcare. This future research could significantly shift the narrative for patient-reported outcome measures in clinical research and inform mental health policy focused on improving the social determinants of health.

Title:

A Rural-Urban Comparison of Barriers to Mental Healthcare Among Adults Experiencing Psychological Distress

Abstract:

Patient-reported outcome measures, such as psychological distress, are commonly used to evaluate healthcare utilization patterns. Serious psychological distress has been widely studied as a predictor of higher healthcare use, however, geographic factors may contribute to variation in utilization patterns, as shortages in mental healthcare providers are greatest in rural and low-income areas. The purpose of this study is to examine rural adults' experiences of psychological distress and barriers to mental healthcare compared with the experience of non-rural adults in California. Using 2014-2018 data for adults aged 18-64 in the California Health Interview Survey, I conduct a series of chi-square analyses comparing rural and non-rural demographic differences and estimate regression models using geographic location and psychological distress as the primary regressors, with structural, financial, and attitudinal barriers to mental healthcare as the response variables. Implications for policy and clinical practice are discussed.

Introduction

Considerable research has found barriers to accessing needed mental healthcare among rural populations (Fox et al., 2001; Hoeft et al., 2018; Human & Wasem, 1991; Jameson & Blank, 2007; Thomas et al., 2012). In many states across the U.S., researchers and policymakers have identified access to mental healthcare as a major rural health concern. In California, the Mental Health Services Act (Proposition 63) was passed in 2004 to expand access to mental health services for individuals at risk for developing serious mental illness. While the legislation prioritizes prevention and early intervention, only 29% of need is met for mental healthcare in California, and California is designated as a Mental Health Care Health Professional Shortage Area (KFF, 2020). A Mental Health Care Health Professional Shortage Area (HPSA) is computed by dividing the number of psychiatrists available to serve the population of the area, group, or facility by the number of psychiatrists that would be necessary to eliminate the mental health HPSA. The United States' workforce shortages in mental healthcare are greatest in rural and low-income areas (Crumb et al., 2019; Olfson, 2016; Ricketts, 2005; Thomas et al., 2012).

Psychological Distress

Fluctuations in mood are normal. However, those that disrupt an individual's ability to function and respond to the daily demands of life may be indicative of mental illness (*Psychological Distress – APA Dictionary of Psychology*, n.d.). There is substantial evidence to suggest an association between level of psychological distress and mental disorders such as bipolar depression and schizophrenia (*Characteristics of Adults with Serious Psychological Distress as Measured by the K6*

Scale, United States, 2001-04, n.d.). Level of distress is determined by the Kessler Psychological Distress Scale (Kessler 10), which was developed by Robert Kessler and colleagues to distinguish significant medical cases from non-cases. The Kessler 10, and its abbreviated version, the Kessler 6, has been used in national health surveys in the United States. The scale has been translated into over 20 languages and has been utilized by the World Health Organization, making it one of the most consistent and reliable patient-reported outcome measures (PROMs).

Background

Individuals who reside in rural areas have higher enrollment rates in the Medicaid health insurance program (Foutz et al., n.d.; Soni et al., 2017). Medicaid primarily provides benefits to low-income individuals and families, and these individuals often experience structural barriers, in addition to financial barriers, when accessing mental healthcare. Additionally, mental healthcare professionals may not be available in rural areas because of reimbursement rates under Medicaid or private health insurance plans. There are many clinicians who provide mental health services, some of whom may experience restrictions when billing for mental healthcare. As a result, healthcare providers living in rural communities may seek employment outside of rural areas where Medicaid enrollment is more prevalent. Research indicates that Medicaid enrollees have better access to care than uninsured individuals. Thus, they’re less likely to delay or forgo needed healthcare due to costs, and they are more likely to report satisfaction with access to care and healthcare as compared to individuals with private insurance (KFF, 2019).

In California, a state that expanded Medicaid after the passage of the

Affordable Care Act (ACA), the uninsured rate was 17.2 percent in 2013. After the implementation of the ACA, the rate of uninsured individuals dropped to 7.2 percent by 2017 and remained at that level in 2018. California made such gains because they opted to fully implement the law by expanding Medi-Cal, California's Medicaid program, to low-income unwedded adults without dependents. During this same period, 2014-2018, health insurance uptake increased among individuals experiencing psychological distress. Of the 39.5 million Californians, 13% are experiencing psychological distress (Padilla-Frausto et al., 2018). Additional information is needed on barriers to mental healthcare among individuals experiencing moderate or serious psychological distress. Information about these barriers can inform mental health efforts in California, and perhaps have broader implications for nationwide mental health policy.

Barriers to Mental Healthcare

When examining factors that influence mental health services utilization, several barriers are mentioned throughout the literature: structural, financial, and attitudinal (Table 1). Structural barriers are challenges originating from institutional policies and procedures that limit the opportunities of people to access care. Structural barriers include factors such as difficulty getting an appointment. Financial, or economic, barriers are challenges originating from costs that limit the opportunities of people to access care. These factors include cost-sharing requirements and health insurance status. Finally, attitudinal barriers are challenges originating from social and cultural contexts that limit opportunities of people to access care. Attitudinal barriers include factors such as stigma or comfortability discussing mental health concerns with a professional.

Table 1. Barriers to Mental Health Services Utilization

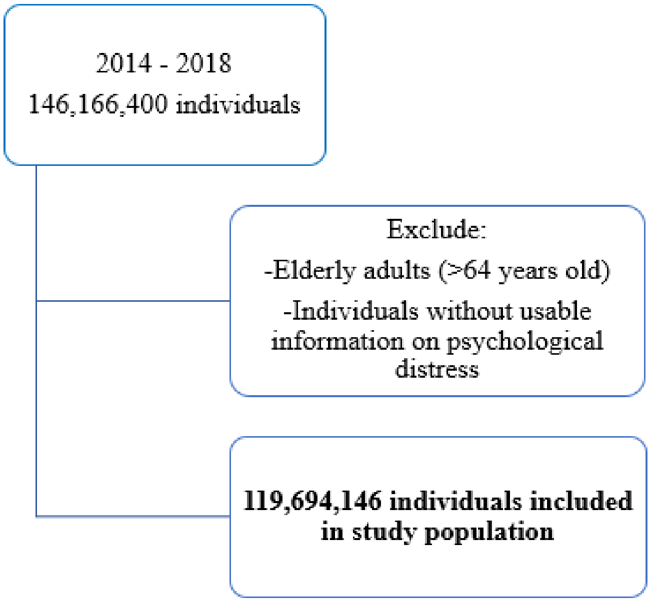
Barrier	**Definition**	**Example**
Structural Barrier	Challenges originating from *institutional policies and procedures* that limit the opportunities of people to access care.	Difficulty getting an appointment
Financial Barrier	Challenges originating from *costs* that limit the opportunities of people to access care.	Cost-sharing requirements and health insurance status
Attitudinal Barrier	Challenges originating from *social and cultural contexts* that limit opportunities of people to access care.	Stigma or comfortability discussing mental health concerns with a professional

Methods

Data

To compare barriers to mental healthcare in California, using geographic location and psychological distress, I analyzed 2014-2018 California Health Interview Survey (CHIS) data. During this period, there were 146,166,400 respondents residing in 58 counties in California, grouped into 44 geographic sampling strata. The same geographic sampling strata has been used since 2005. Residential addresses were selected within each geographic strata to include one randomly selected adult. Random digit dialing (RDD) of cellphones and landlines are utilized to identify respondents. Once identified, interviews are guided in numerous languages to capture the diversity of Californians; these languages include English, Spanish, Chinese, Korean, Vietnamese, and Tagalog. The original sample for this study consisted of 146,166,400 adults. After restricting the sample to non-elderly adults and those with usable information on psychological distress, the final sample universe consisted of 119,694,146 individuals. The chart below is a flow diagram of the sample population.

Chart 1. Flow Diagram of Adults in the California Health Interview Survey, 2014-2018



Psychological Distress

The Kessler Psychological Distress Scale (Kessler 6) was utilized to evaluate level of psychological distress among the sample population. The Kessler 6 has been tested for its reliability as a patient-reported outcome measure (PROM). The Kessler 6 is an abbreviated version of the Kessler 10. Due to the Kessler 6's brevity and consistency across numerous sample populations, it is used often when screening for mood or anxiety disorders. Respondents are asked "During the past 30 days how often did you feel sad, nervous, restless, hopeless, worthless, and that everything was an effort." The answer "None of the time'' is given a score of 0, while the answer ''all of the time'' is given a score of 4. The total possible score ranges from 0 to 24. A score of 13 or greater indicates serious or severe psychological distress. Individuals experiencing high levels of psychological distress are likely to experience significant disruptions in their daily activities including social and occupational functioning; these individuals are also likely to require treatment. A score of 7-12 indicates moderate psychological distress. Individuals with lower levels of psychological distress may be at risk of facing serious psychological distress. As a result, targeted prevention efforts would be well-suited for this population.

Data Analysis

The analytic approach is three-fold. First, a series of chi-square analyses are utilized to examine potential differences in demographic characteristics between rural and non-rural adults. Second, crosstab comparisons are utilized to examine rural and non-rural differences in subjective or felt need for mental healthcare, access to mental healthcare, and perceived barriers to mental healthcare. Third, a series of logistic regression models are used to model the impact of residing in a rural area on access to mental healthcare and perceived barriers to mental healthcare.

The CHIS asks respondents “In the past 12 months have you seen your primary care physician or general practitioner for problems with your mental health, emotions, nerves, or your use of alcohol or drugs?” and “In the past 12 months have you seen any other professional, such as a counselor, psychiatrist, or social worker for problems with your mental health, emotions, nerves, OR your use of alcohol or drugs?” There is a follow-up item that asks respondents “Did you seek help for your mental or emotional health OR for an alcohol or drug problem?” As a result, I include both primary care and specialty care visits for mental health and exclude visits that were for an alcohol or drug problem. This measure does not include overnight hospital stays. While the primary regressors are whether a respondent resides in a rural area and their level of psychological distress, I include the following covariates in the models: age, sex, marital status, race/ethnicity, educational attainment, employment status, and poverty level.

Results

Sample Characteristics

The sample population is 94% urban and only 6% rural. Most of the sample identified their racial/ethnic identity as Latino (41%); however, White (38%), Black (6%), Asian (15%), Native American (<1%), multiracial (<1%), are also included in the sample population. The urban-dwelling respondents had more racial/ethnic diversity compared to the rural respondents. Native Americans were the only minority racial group to live in greater numbers in rural areas of the state. Over 5 times the number of Blacks live in urban areas compared to rural areas and over 7 times the number of Asians live in urban areas compared to rural areas. And, while whites are most populous in rural areas, Latinos are the majority in urban areas in California. When examining education and employment levels, there was also a significant rural versus urban difference. The percent of individuals who are poor or low income is higher in rural areas, 45% compared to 35%. Further, the prevalence of unemployment was remarkably high among rural residents in California, 31% compared with 26% among non-rural residents. Additionally, rural residents had a higher percent of individuals who reported fair or poor health status. Table 1 presents the sample characteristics.

Table 2. Rural-Urban Sample Characteristics in the California Health Interview Survey, 2014-2018

	Rural **n = 6,679,082**	**Urban** **n = 113,015,064**
Sex		
Female	50%	50%
Male	50%	50%
Race/Ethnicity		
Latino	39%	42%
White	55%	36%
Black	1%	6%
Asian	2%	15%
Native American	2%	<1%
Multiracial	<1%	<1%
Marital Status		
Married	51%	47%
Unmarried	49%	53%
Education		
High School Diploma or Less	49%	42%
Some College	19%	16%
College Degree	25%	32%
Graduate Degree	6%	10%
Poverty Level		
Poor	22%	17%
Low Income	23%	18%
Middle Income	16%	13%
High Income	39%	51%
Employment		
Employed	69%	74%
Unemployed	31%	26%
Self-Reported Health Status		
Excellent or Very Good	45%	49%
Good	31%	31%
Fair or Poor	24%	20%

Psychological Distress

Living in a rural area was a significant predictor of moderate psychological distress, but not severe psychological distress. Individuals experiencing severe psychological distress were 27 times as likely to report subjective unmet need for mental healthcare. Those with moderate levels of distress were more likely to report subjective unmet need.

Barriers to Mental Healthcare

Attitudinal barriers, such as concerns about what would happen if people found out an individual was seeking professional treatment for mental or emotional needs (i.e. stigma), and comfortability discussing mental health problems with a provider, each hinder access to healthcare. Financial barriers, such as health insurance coverage for mental health treatment, also limits access to healthcare services. Structural barriers, such as difficulty getting an appointment for mental or emotional needs, or language challenges that hinder the ease of healthcare accessibility for certain populations, also plays a role in healthcare access. Table 2 presents the cross-tab comparisons. While none of the barriers are significant, it's important to note that rural residents are only 6% of the sample population.

Table 3. Logistic Regression Models Predicting Selected Variables with Rural Variable of Interest

	Rural (%)	**Urban (%)**	**p-value**
Subjective Unmet Need (n = 24,008,286)	1%	19%	0.833
No Mental Healthcare Visit(s) (n = 101,629,892)	5%	80%	0.830
Doesn't Have Usual Source of Care (n = 20,237,549)	1%	16%	0.849
Mental Healthcare Cost Concerns (n = 3,892,281)	<1%	3%	0.585
Mental Healthcare Stigma (n = 6,007,601)	<1%	5%	0.500
Not Comfortable Discussing Mental Health Problems with Provider (n = 1,662,114)	<1%	13%	0.086
Difficulty Making an Appointment to Receive Mental Healthcare (n = 990,825)	<1%	<1%	0.255
Health Insurance Doesn't Cover Mental Healthcare (n = 15,633,325)	<1%	3%	0.839

Note: Separate logistic regression models for each of the dependent variables (1st column) and estimates of the Odds Ratios (OR) for rural/urban status and corresponding p-value.

Individuals in rural areas were slightly more likely to have health insurance, both public and private. These associations were significant. Rural residents were slightly less likely to have a usual source of care, but the association was not significant. They also were less likely to report a healthcare visit for mental or emotional needs, but this was not significant. Individuals residing in rural areas were slightly less likely to report cost concerns for seeking mental healthcare. Rural residents were slightly more likely to report discomfort speaking with a professional about issues regarding their mental health and stigma associated with someone finding out they're speaking with a professional. Additionally, rural residents were more likely to report that their health insurance did not cover mental health treatment and that they did not receive needed mental healthcare due to difficulty with scheduling an appointment. This barrier to mental healthcare, lack of health insurance coverage of mental health services, was reported by 13% of all individuals included in this study, both rural and urban residents. Table 3 presents the regression model results with various barriers to mental healthcare as the outcome variable and rural residence as the primary regressor.

Table 3. Eight Logistic Regression Models of Selected Barriers to Mental Healthcare with the Adjusted Impact of Rural Residence

	Rural (OR)	**p-value**
Subjective Unmet Need	.859	0.191
No Mental Healthcare Visit(s)	.845	0.119
Doesn't Have Usual Source of Care	.965	0.750
Mental Healthcare Cost Concerns	.973	0.874
Mental Healthcare Stigma	1.32	0.176
Not Comfortable Discussing Mental Health Problems with Provider	1.11	0.634
Difficulty Making an Appointment to Receive Mental Healthcare	1.11	0.454
Health Insurance Doesn't Cover Mental Healthcare	1.24	0.214

OR = Odds Ratio

Discussion

Some of the results in this study were not significant. However, previous research findings indicate that states, such as California, that expanded Medicaid coverage to include non-elderly adults have increased access to care, improved self-reported health, and reduced mortality among adults (KFF, 2020). Researchers have long held that if individuals are provided access to health insurance, they will use it (Einav & Finkelstein, 2018; Manning & Marquis, 1996; Pauly, 1968). One of the great questions in health services research remains why despite gains in health insurance coverage, certain demographics have less access to healthcare. Geographic barriers, whether someone resides in a rural or non-rural area, may explain some of the variation. Rural areas in the United States are racially and ethnically diverse, but based on the results of this study, racial and ethnic minorities reside primarily in urban areas in California. Native Americans were the only member of a non-White racial group who resided in rural areas in greater numbers. More than 20% of rural residents in the U.S. identify as Native Americans or as a member of a non-White racial group. Native Americans have high rates of mental health problems including suicidal ideation and co-occurring substance use disorders (Gray & McCullagh, 2014). With fewer mental health provider options, it may be more difficult for these patients who live in rural America to find providers who share or understand their culture, as many rural residents in this study reported difficulty making an appointment for mental or emotional needs. Future policies should consider strategies to increase access to mental healthcare among these historically oppressed and vulnerable populations.

While this dissertation study did not consider what's referred to in the CHIS as tele-medical care, recent studies that have specifically examined tele-mental health and have determined that these interventions did not vary significantly from in-person treatment (Shigekawa et al., 2018). As a result, this approach may be useful for individuals experiencing anxiety, stress, and lower levels of psychological distress, yet who reside in rural areas. A limitation of tele-medical care may be access of the patient to the internet services or technology literacy. However, according to CHIS data, 1 in 10 people across the state of California used some form of telemedicine in 2015 (*Three Questions for the Expert | UCLA Center for Health Policy Research*, n.d.). This could improve access to needed mental healthcare by addressing barriers sometimes referred to as enabling services: not having time for mental health treatment, childcare needs, or transportation needs. According to Shigekawa and colleagues, "Telehealth has the potential to improve access to care for specific patient populations of particular concern, including people living in rural areas, those with transportation barriers, and those facing provider shortages," (Shigekawa et al., 2018). Further, California is a leader in telehealth policy and was one of the first states to pass a telehealth law (*California Telehealth Policy Coalition*, n.d.). A recent amendment to the law indicates that health plans issued, modified, or renewed on or after January 1, 2021, requires payers to reimburse for telehealth services at the same rate as in-person services.

Conclusion

To address disparities in access to mental healthcare, policymakers should focus on expanding the availability of telemental health services and consider the needs of high-need populations such as rural Native Americans. The Kessler 6 helps clinicians identify patients with depression. In a rural healthcare system, this data could also help improve care coordination, especially as patients move from their primary care provider into specialty mental healthcare and encounter difficulties scheduling an appointment. Patient-reported outcome measures, such as psychological distress, can be useful to developing more informed decisions surrounding mental health treatment including improving the quality of care and access to care among vulnerable populations. Future research should build on this work by exploring psychological distress using longitudinal research, which can help researchers and clinicians better understand how psychological distress evolves over time and responds to early intervention and prevention efforts. This could also help inform policymakers about how perceptions of barriers to mental healthcare changes as people age and navigate the healthcare system.

Discussion

This dissertation estimates mathematical models using widely cited theories of behavioral health services utilization. The first chapter introduces patient-reported outcomes and mental health disparities. The second chapter is exploratory; I characterized psychological distress by describing who is at risk for moderate or severe levels of distress. Using data from the California Health Interview Survey and the Medical Expenditure Panel Survey, I fit a multinomial logistic regression model with a three-level response variable based on the Kessler 6 psychological distress scale (no/low distress, moderate distress, severe distress). The third chapter is experimental. I modeled healthcare visits for mental or emotional needs using a three-level psychological distress variable as my primary regressor. Using CHIS data, I fit a binomial logistic regression model for realized access to mental healthcare. Then, I estimated a traditional count data model and a zero-inflated version for continued access to mental healthcare for individuals who report one or more visits.

The fourth chapter considers barriers to mental healthcare by comparing rural-urban differences in access to healthcare services. I determined whether living in a rural area significantly predicts subjective unmet need for mental healthcare, access to mental healthcare, and perceived barriers to mental healthcare. Using data from the California Health Interview Survey, I estimate a series of binomial logistic regression models for barriers to mental healthcare. Barriers to mental healthcare include health insurance, psychological distress level, usual source of care, comfortable discussing problems with provider, stigma concern, cost concern, inaccessibility due to a lack of health insurance coverage of mental healthcare, and the limited availability of mental healthcare providers in the area. Whether a respondent resides in a rural or urban area was included as a categorical predictor variable. I controlled for age category, race/ethnicity, educational attainment, employment status, marital status, poverty level, and sex.

California is the most populous state. Generally, California's population is more urbanized than other areas cross the United States. However, California has a significant rural land mass with a rural population spread throughout many counties. Over 55% of the state is rural. Attitudinal barriers such as concerns about what would happen if people found out an individual was seeking professional treatment for mental or emotional needs (i.e. stigma) and comfortability discussing mental health problems with a provider were significantly related. Financial barriers such as health insurance coverage of mental health treatment was reported by over 13% of all non-elderly adults included in the California sample population. Additionally, internet access affects rural Americans' ability to utilize telemental health services. One in four rural adults report using telehealth for healthcare within the past few years, which includes: receiving a diagnosis or treatment from a health professional via phone, email, text messaging, live text chat, a mobile app, or live video. Further, individuals who reside in rural areas have reported high satisfaction with telehealth and many have reported using telehealth to obtain prescriptions and manage chronic conditions.

Healthcare visits for mental or emotional needs do not typically involve a physical exam, so those who need mental healthcare, individuals experiencing moderate or severe psychological distress, may benefit from telemental healthcare.

These efforts should focus on telemental healthcare via the telephone, which does not require access to internet services or technology literacy. Many rural communities rely on the internet to obtain health and healthcare information, but over 20% of rural adults report access to high-speed internet as a problem for their household. However, rurality varies widely by state (Foutz et al., n.d.).

The health policy implications surrounding tele-medical care are numerous and timely. However, access to needed healthcare using telehealth is a health equity issue, as individuals not only experience restrictions due to internet services, but language barriers. Rodriguez and colleagues recently determined that “Telehealth has the potential to address disparities, but only if it meets all patients’ needs, no matter what language they speak," (Rodriguez et al., 2021). Using CHIS data from the same period as this dissertation research study, the authors examined the association between English proficiency and telehealth access and utilization. Healthcare settings with providers who accept public health insurance funds are legally required to provide language interpretation services. This is important due to the increase in Medicaid enrollees experiencing psychological distress who have a need for mental healthcare, as many are racial and ethnic minorities. This study supports my research findings regarding the significance of health insurance, usual source of care, racial/ethnic group affiliation, and geographic location. The results of this study indicate that health insurance remains a significant factor in whether individuals have access to needed mental healthcare, especially for those who reside in rural areas. This is vital information for policymakers to understand the need for healthcare and factors that contribute to inequitable access.

Health Policy Implications

Patient-reported outcomes, such as psychological distress, can be used to inform clinical mental health policy and practices in vulnerable populations such as those in rural areas. Over 30% of all outpatient visits were provided via telemedicine from January 2020 to June 2020 (Patel et al., 2021). Mental health conditions have increased in prevalence since the coronavirus pandemic began (*Five Urgent Public Health Policies To Combat The Mental Health Effects Of COVID-19 | Health Affairs Blog*, n.d.). Telehealth visits for mental health have been the highest compared to telehealth visits for other health conditions(*Five Urgent Public Health Policies To Combat The Mental Health Effects Of COVID-19 | Health Affairs Blog*, n.d.). Yet, further research is needed to clarify how the usage of telehealth services maps across the geospatial dimensions or rural geographies. If the utilization of telehealth services is highly concentrated in discrete locations, then the data can obscure a lack of access in other isolated regions that disproportionately experience barriers that limit access to such services. Additionally, if there is an inequitable distribution of resources necessary to utilize telehealth services, further research would uncover whether isolated communities share similar demographics.

While the Medicaid expansion fueled health insurance uptake among individuals experiencing severe levels of distress, rates of telemedical care for mental health and substance use disorders among Medicaid beneficiaries increased during the same period, (Creedon et al., 2020). Although provision of telemedicine services increased during this dissertation study period and was somewhat more common among rural Medicaid beneficiaries, it remains an underused resource for addressing healthcare shortages in rural areas. (Creedon et al., 2020). Previous research studies have drawn attention to the gaps in mental healthcare across the United States (Cummings et al., 2013). Regions of the US with a higher number of Black or Latino individuals have less access, many based on geographic access (i.e., residing in a rural area). Policymakers should examine the mental healthcare system and whether providers in high-need areas accept Medicaid, the primary payer for mental healthcare in the United States.

This dissertation research study focused on non-elderly adults and how their need for mental healthcare varies based on health insurance status, racial/ethnic group affiliation, and geographic location. In 16 states, the share of the non-elderly population that lives in small towns and rural areas comprises one-third or more of the population ("Health Insurance Coverage in Small Towns and Rural America," 2018). While provider acceptance of certain health insurance plans is a significant issue, workforce shortages remain the greatest in rural and low-income areas. To address disparities in mental healthcare utilization, policymakers should focus on expanding the availability of telemental health services, ensuring provider acceptance of Medicaid, and recruiting providers, especially those who are adept in meeting the needs of rural residents.

Limitations

The CHIS is cross-sectional data, so this doesn’t allow for an examination of how various factors affect barriers to mental healthcare over time. Using longitudinal data to examine patient-reported outcome measures such as psychological distress would allow for better understanding of how individuals respond to mental health interventions and their mental healthcare utilization over time. Nonetheless, the CHIS is the largest state health survey in the country and is utilized by various stakeholders throughout the State of California to inform health policy on healthcare delivery and financing. CHIS data is also used as a model to other states for health-related data collection efforts. Certain racial and ethnic groups may be less likely to report need for mental healthcare. However, the Center for Health Policy Research at the University of California - Los Angeles, which manages the CHIS data collection efforts, conduct thorough outreach efforts to racial and ethnic minorities and administers the survey in multiple languages. So, the CHIS is still a representative sample of Californians. However, the Medical Expenditure Panel Survey is only administered in English and Spanish. This could be related to language barriers, which was not measured in this research study.

Further, the Kessler 6 is based on the previous 30 days, while visits for mental or emotional needs is based on the previous 12 months. However, studies have determined the validity of this patient-reported outcome measure. Also, mental, or emotional needs is very broad. This measure may include grief counseling, marital or relationship counseling, or other forms of behavioral healthcare. Additionally, the CHIS ask respondents “Did you seek help for your mental or emotional health OR for an alcohol or drug problem?" I only included primary care and specialty care visits for mental health and excluded visits that were for an alcohol or drug problem. Individuals who are experiencing substance use disorders may also be experiencing high levels of distress. Further, I did not include overnight hospital stays. However, this metric is typically utilized in health services research that considers healthcare costs. This study focuses on access to healthcare. Additionally, access in this study only included office-based visits (primary or specialty mental healthcare) and not hospital settings.

Additionally, this study did not explore geospatial distribution that could potentially contribute to a lack of access, which means we do not know whether unmet need is highly concentrated in certain geographical regions and how that concentration correlates to other factors, such as distance to a mental health provider or lack of transportation. This could reveal other policy issues that relate to unmet need. There are many other possible competing factors that future research could explore by taking a geospatial approach to exploring rural-urban differences in the context of unmet need for mental healthcare services.

Finally, individuals who experience some of the highest levels of psychological distress are likely to be incarcerated or have a previous history of trauma. Many are also homeless or institutionalized. Because this research study includes household surveys, these individuals are not included. Additionally, these individuals are likely to be marginalized populations such as racial and ethnic minorities. This may have contributed to the decreased significance or predictive value of racial and ethnic group affiliation in this dissertation.

Future Research

Future research should build on this work by exploring psychological distress, taking a broader life-course perspective, using both qualitative and quantitative methods. In this way, performance measurement can be conducted to determine if quality of life has improved for patients with moderate or severe levels of distress over time. The results of such studies could inform clinical mental health policy and practice, especially for individuals residing in rural areas. While this study did not consider what’s referred to in the CHIS as “tele-medical care”, recent studies that have specifically examined telemental health and have determined that these interventions did not vary significantly from in-person treatment (Shigekawa et al., 2018).

Future studies should also examine the use of telemental health for prevention, early intervention, and treatment efforts; these efforts are extremely timely given the ongoing COVID-19 pandemic. This study did not examine language barriers regarding access to needed mental healthcare. This is a critical issue with the increase in the use of telehealth services, especially among racial and ethnic minorities, as a third of US healthcare settings do not offer language services (Schiaffino et al., 2014).

Additionally, future studies should consider employing mixed methods when examining racial and ethnic groups that have been historically oppressed in the United States. Mixed methods research could yield significant insight regarding within group differences between and within Native Americans, Asians, Latinos, and even Blacks. Further, there are differences in rural whites compared to other white Americans. Rural whites are typically older and experience less access to healthcare and additional barriers like their non-white rural counterparts. According to the National Association of Rural Health Clinics, “rural states have been some of the hardest hit by the pandemic . . . they tend to have older populations and a high prevalence of underlying medical conditions. People in rural areas may also be more vulnerable because of a lack of nearby medical care or health insurance” These sentiments were echoed by the National Rural Health Association (NRHA), which highlighted chronic health issues and chronic workforce shortages, and said “It is the worst possible public health setup,” (NBCNews.com, n.d.). As such, future studies should examine psychological distress among older adults in rural areas, especially those with chronic health conditions.

Conclusion

This study models prevalence and need for mental healthcare using multiple datasets, the California Health Interview Survey and the Medical Expenditure Panel Survey. This study examines need based on psychological distress, a patient-reported outcome. Psychological distress has been used in previous studies to determine need for mental healthcare and compare access to mental healthcare. What's unique about this study is the comparison of mental healthcare access based on moderate or severe psychological distress and the exclusive focus on non-elderly adults during a crucial time for public health insurance law and policy. The Affordable Care Act's provision to expand Medicaid to non-elderly adults contributed to a significant uptake in health insurance among individuals with severe levels of distress.

Findings in this dissertation research suggest that health insurance remains a significant factor in access to healthcare. This dissertation demonstrates the need for prevention and early intervention efforts to target individuals experiencing moderate psychological distress. While mental healthcare use remains significant for those with the greatest level of need, my dissertation study suggests that for rural residents, healthcare for mental or emotional needs is comparable. Given the ongoing coronavirus pandemic, and the likelihood of future pandemics, the provision of mental health services will need to include telemental healthcare or mental health applications used on cellular phones or other electronic devices. This dissertation research should be considered when discussing the use of technology-based interventions among individuals experiencing moderate or severe psychological distress, especially in racial and ethnic minority populations and rural residents.

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