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A Disparities Analysis of Cancer Patients' Access to Depression Treatment by Health Insurance Status and Type

Stephanie Minbiole-Snider
Walden University

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Walden University

College of Health Sciences and Public Policy

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Stephanie Minbiole-Snider

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2025

Abstract

A Disparities Analysis of Cancer Patients' Access to Depression Treatment

by Health Insurance Status and Type

by

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MPH, Florida International University, 2011

MS, Canisius College, 2000

BA, SUNY at Buffalo, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2025

Abstract

Research has demonstrated that comorbid conditions like depression in cancer patients reduce quality of life, prolong recovery, and reduce survival time of the cancer patient. Although other studies have investigated the issue of depression among cancer patients, there is a dearth of studies looking at differences in taking depression medication with health insurance as a source of disparity. Using survey data from the National Health Interview Survey (NHIS), and the health belief model as the theoretical framework, this study had two purposes. The first was to determine if there were differences in the likelihood of taking medication for depression based on health insurance status (not having vs. having health insurance) among adult breast, colorectal, skin, prostate, and/or lung cancer patients. The second was to determine whether there were differences in the likelihood of taking medication for depression based on type of health insurance (public vs. private) among those same patients who had health insurance. Although bivariate logistic regression analyses found no statistically significant differences, multivariate logistic regression analyses controlling for gender, race, and age found that those with health insurance were 2.128 times as likely to take depression medication as those without health insurance, and that among those with health insurance, those with public insurance were 2.168 times as likely to take depression medication as those with private insurance. The study's findings underscore the need for targeted interventions, culturally competent care, and enhanced screening to ensure equitable access to depression treatment for all cancer patients, regardless of insurance status, particularly for underserved racial populations, in oncology practices.

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Dedication

This study is dedicated to my daughters Kristen and Emily, the greatest joys of my life and the reason I work hard every day.

I also dedicate this to my friend, B.P., whose fight with cancer inspired this research. B, I never thought for one second this disease was going to win against you. Keep fighting.

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Chapter 1: Introduction to the Study

Introduction

While the overall death rate from cancer has shown declines from 2015 to 2019 of an average of 2.3% per year for men and 1.9% per year for women, cancer continues to be the second leading cause of mortality in the United States, causing approximately 611,720 deaths annually (National Cancer Institute, 2024). The largest declines in mortality have been noted in lung cancer and melanoma skin cancer due to declines in smoking and the development of new and improved skin cancer treatments (National Cancer Institute, 2024) but, despite the large decline in lung cancer mortality, lung cancer continues to be the leading cause of cancer mortality in both males and females (American Cancer Society, 2024; National Cancer Institute, 2024).

In the United States, breast, prostate, colorectal, lung, and melanoma skin cancers are the five most prevalent cancers. Together, these five cancers are responsible for 56% of new cancer cases and account for approximately 43% of cancer-related deaths. (National Cancer Institute, 2024). In women, breast, lung, and colorectal cancers together will account for 51% of new cancer cases in 2024 (National Cancer Institute, 2024). For men, prostate, lung, and colorectal cancers will account for 48% of new cancer cases in 2024 (National Cancer Institute, 2024). Although skin cancer is officially the most prevalent cancer in both genders, basal cell and squamous cell skin cancers are not considered serious and therefore are not required to be reported to cancer registries and are not figured into cancer statistics (American Cancer Society, 2024). For this reason, most of the literature regards breast as the most prevalent cancer in women and prostate

as the most prevalent cancer in men (American Cancer Society, 2023; National Cancer Institute, 2023).

Patients with cancer are frequently faced with monetary stress stemming from the cost of care as well as difficulties in maintaining continual employment while undergoing treatment. Economic strains include financial toxicities and financial distress, defined by the National Cancer Institute as financial problems due to paying for the high out-of-pocket costs of medical care (National Cancer Institute, 2024). Financial toxicity can range from trouble paying for treatment and other necessities, including food and housing, to complete bankruptcy (National Cancer Institute, 2024). Financial distress may impact a patient's quality of life as well as quality of treatment, since some patients will not take prescribed medications as directed to save money (National Cancer Institute, 2024). Those without healthcare insurance or who are underinsured are disproportionately paying more costs out of pocket than those with a robust health care policy, leading to increased financial stress.

A cancer diagnosis, treatment, and the subsequent costs can have a profound impact on a person's mental health, and mental health conditions can conversely influence how individuals cope with cancer. Comorbid conditions, including those impacting mental health, add a layer of financial complexity to an already complicated disease. A cancer diagnosis can often trigger a range of intense emotions, including distress, anxiety, sadness, anger, and grief. Coming to terms with the diagnosis as well as the uncertainty surrounding treatment and outcomes can be challenging, leading to depression or anxiety, the two most common mental health conditions among adults in the United States (Institute of Health Metrics and Evaluation: Global Health Data

Exchange, n.d.). Cancer also impacts social interactions and may lead to isolation with a lack of social support contributing to feelings of loneliness, depression, and anxiety (Evans and Fisher, 2021). Cancer may impact the caregivers within the patient's immediate social and familial circle as well, and caregivers may experience their own bouts of increased stress, anxiety, depression, and burnout, as they navigate the challenges of supporting a loved one with cancer (Kent & Dionne-Odom, 2019). Each of these impacts of a cancer diagnosis is compounded when financial distress, due to inability to pay for care, is layered on. The emotional burden of cancer, the physical symptoms due to cancer, side effects of treatment, and disruption of daily life can contribute to the development or worsening of depression or anxiety, common mental health conditions with a combined lifetime prevalence of 29% in the general adult population (Witters, 2023).

For providers, knowing the widespread prevalence of comorbid depression or anxiety among cancer patients may encourage them to screen for these disorders and when needed, initiate mental health treatment among cancer patients, thereby helping to alleviate some mental health struggles. However, the literature is not clear and suggests that many oncologists do not focus on mental health conditions as a part of ongoing cancer care, due to their lack of specific training and knowledge, lack of time in their workday, and/or limited provider and health system resources available to both train oncologists in the care of mental health conditions and provide mental health care to patients as well as the stigma associated with mental health conditions (Granek, et al., 2019). The purpose of this study was to determine if there are any differences in taking or

not taking medication for comorbid depression based on health insurance among cancer patients.

Although research demonstrates that depression or anxiety reduce the survival time of cancer patients (Brandão et al., 2018; Huang, et al., 2022;) and reduce their overall quality of life (Gu, et al., 2020), the precise prevalence of these mental health conditions as a cancer comorbidity varies greatly in the literature due to differences in measurement techniques, types of cancer, and populations. A 2020 study by Wang et al. found that about one third of all cancer patients suffer from a behavioral health condition such as depression. Bravery et al. (2020) stated that one in six individuals (approximately 17%) with cancer is likely to develop depression during his/her cancer treatment, but that this figure varies by type of cancer. Caruso and Breitbart (2020) stated that psychiatric disorders impact at least 30-35% of patients with cancer, with variability based on their stages of cancer, finding higher rates of diagnosable psychiatric conditions in patients with advanced stages of cancer or those in palliative care. Caruso and Breitbart (2020) also found that an additional 15-20% of cancer patients suffer from other psychosocial conditions not classified as disorders, including loss of life's meaning, concern about one's health, and demoralization.

Beyond the impact on patients, addressing mental health conditions alongside medical conditions such as cancer is critical to the American healthcare ecosystem, as the impact expands into the landscape of hospital quality measures through increases in length of stay, rates of readmissions, and costs (Beeler et al., 2020;). Factors such as length of stay, the need to be readmitted, and cost have an impact on the patients' care and influences the ability of a healthcare facility to effectively treat other patients in need

of care. Recognizing areas to improve clinical operations and patient throughput can be a source of opportunities for the increasingly overburdened healthcare system in the United States (Shmerling, 2021).

Problem Statement

Mental health conditions such as depression and anxiety are highly prevalent and can significantly impact a patient's medical condition. With approximately 21% of American adults currently living with a mental illness (Mental Health America, n.d.), it is common for any of these conditions to intimately interact with medical conditions such as cancer. Such comorbidities can have negative effects on cancer patients, impacting overall well-being by reducing quality of life (Gu et al., 2020) and potentially affecting cancer outcomes by decreasing adherence to treatment (Conley et al., 2022; Gu, et al., 2020), delaying healing and recovery (Niedzwiedz et al., 2019), and increasing risk of mortality (Gu et al., 2020; Zoorob et al., 2019), leading to the need for both insurers and oncologists to seek better ways to improve care coordination.

Identifying all avenues by which a person might be able to access behavioral health care has become a social problem worthy of research, partially due to the negative outcomes associated with cancer, but also because addressing disparities in access to behavioral healthcare in the United States is a complex and multifaceted challenge that warrants further research and understanding. Various policy initiatives, such as the Affordable Care Act (ACA), have aimed to expand insurance coverage and reduce disparities (Buchmueller & Haffajee, 2024), but work remains to enforce payment parity for mental health conditions by making health insurance companies cover them at the same rate as medical conditions. Disparate access to healthcare within the United States

is a significant medical and public health issue that is deeply entrenched in society. As a result, different groups of people having varying levels of access to healthcare services has been a subject of concern and debate for many years, centering around the unequal distribution of healthcare resources and opportunities (Evans, 2020; Wasserman et al., 2019).

Disparities in healthcare access take several forms, including racial/ ethnic, socioeconomic, and environmental. For example, African Americans and Hispanic Americans are more likely to be uninsured and experience worse health outcomes compared to white Americans (Funk & Lopez, 2022; Hill, & Artiga, 2024; Hill et al., 2023). Socioeconomic status is also a strong determinant of healthcare access. People with lower incomes may struggle to afford health insurance premiums, copayments, and deductibles, which can lead to worse outcomes and increased mortality (Collins et al., 2022; Ubri et al., 2017). However, disparities in healthcare are broader than just the ability to afford healthcare and can be impacted by the environment in which a patient lives, since some areas do not have adequate services. Access may be impacted when there is a scarcity of specialty care in the area, when patients lack transportation, or when the distance to providers is prohibitive. The United States faces ongoing and increasing shortages of healthcare providers in several medical specialties, including mental health, and has designated many geographic regions as Health Professional Shortage Area (HPSA; Health Resources and Services Administration, 2023). An HPSA is a defined geographic area that has a shortage of healthcare providers for specific services such as mental health, primary care, and dental care (Health Resources and Services Administration, 2023). This classification allows for the distribution of additional

resources through federal programming (Health Resources and Services Administration, 2023). Shortages in healthcare providers, particularly specialty providers like those in mental health and oncology, make it more difficult for individuals in underserved areas, such as rural markets, to find and receive timely health care, especially for those patients who need specialty care, including mental health services or specialized medical treatments (Cyr et al., 2019). These patients often face long wait times or must travel long distances to receive appropriate care. Limited transportation options in specific areas can make it challenging for individuals to access healthcare facilities. This can be especially problematic for elderly individuals and those with disabilities.

While each of these concerns has an impact on health inequalities, inequalities in insurance coverage are frequently considered one of the leading drivers of healthcare disparities in the United States (Tolbert & Drake, 2023). Many Americans are uninsured or underinsured, which limits their access to necessary medical care, including preventive care, with minorities, low-income individuals, and people in certain geographic regions being disproportionately affected (Tolbert & Drake, 2023).

Purpose of the Study

The purpose of this quantitative study was to examine if there is a difference in taking medication for depression (yes or no) based on health insurance status (having health insurance vs. not having health insurance) and type (public vs. private), among breast, colorectal, melanoma skin, prostate, and/or lung cancer patients. Taking medication for depression was used as a proxy for access to depression treatment. To address the research questions in this quantitative study, I used a cross-sectional design. I focused on whether there are differences in taking medication for depression that are

enabled or hindered by health insurance for patients with cancer and comorbid depression. The dependent variable was taking or not taking depression medication, and the independent variables were sex, age, race, having breast, colorectal, skin, prostate, or lung cancer, and insurance status and type.

Although researchers have investigated the issue of depression among cancer patients, they primarily focused on the prevalence of depression among cancer patients, and their findings tended to be incongruent due to the various types of cancer, times since being diagnosed with cancer, and types of treatment studied (Niedzwiedz et al., 2019). Those studies which identified disparate access to healthcare focused primarily on the patient's sociodemographics (race, employment, etc.), while none of them focused on insurance status as a source of disparity.

Research Questions and Hypotheses

The research problem that I addressed through this study was whether there are differences in taking or not taking medication for depression based on health insurance status (having health insurance vs. not having health insurance) and type (public vs. private), among breast, colorectal, melanoma skin, prostate, and/or lung cancer patients. I hypothesized that there was a difference in taking or not taking medication for depression based on health insurance status (having vs. not having health insurance), and among those having health insurance, a difference in type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Research Question 1 (RQ1): Is there a difference in the likelihood of taking medication for depression (yes or no) based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients?

Null hypothesis (H_01): There is no difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Alternative hypothesis (H_a1): There is a difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Research Question 2 (RQ2): Is there a difference in the likelihood of taking medication for depression (yes or no) based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race?

Null hypothesis (H_02): There is no difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race.

Alternative hypothesis (H_a2): There is a difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race.

Research Question 3 (RQ3): Is there is a difference in the likelihood of taking medication for depression (yes or no) based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients?

Null hypothesis (H_03): There is no difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Alternative hypothesis (H_a3): There is a difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Research Question 4 (RQ4): Is there is a difference in the likelihood of taking medication for depression (yes or no) based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race?

Null hypothesis (H_04): There is no difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients, while controlling for sex, age, and race.

Alternative hypothesis (H_a4): There is a difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients, while controlling for sex, age, and race.

Theoretical Framework for the Study

The theory that I used to ground this study was the health belief model (HBM), which posits that patients will engage in health behaviors that are likely to reduce a threat or consequence. I used the HBM to explore how cancer patients perceive the threat of depression and their susceptibility to it, as well as the perceived benefits of and barriers to taking action to prevent or manage their depression.

Perceived susceptibility in the HBM refers to a person's subjective assessment of his/her risk of or vulnerability to a particular health condition or disease. In this study, it reflected a cancer patient's belief about the likelihood of experiencing depression. Perceived benefits explore a person's feelings regarding the benefits of a recommended action to reduce a health threat (Glanz et al., 2015). I considered a cancer patient's perceived benefit of taking medication for depression. Perceived barriers are a person's feelings on the challenges that may come about when executing a recommended health action (LaMorte, 2022). This study's perceived barriers were financial obstacles related to not having insurance or the financial means to access treatment for depression, making treatment for depression unaffordable.

Nature of the Study

I used a quantitative methodology in this study to determine whether there is a relationship between taking medicine for depression (yes or no) and the patients' health insurance (status and type) among patients with five different types of cancer.

I used the secondary data from the 2019 to 2022 National Health Interview Survey (NHIS) from the Centers for Disease Control and Prevention (CDC) and analyzed them using SPSS. Data points from the NHIS dataset include taking or not taking

medication for depression, health insurance coverage status, has private health insurance, has military health care coverage, has Medicaid insurance, ever had breast, colorectal, skin, prostate, or lung cancer, age, sex, and race.

Definitions

Definitions for the independent and dependent variables used in this study are as follows:

Cancer: According to the National Cancer Institute, cancer is defined as a disease in which certain cells grow uncontrollably and spread to different parts of the body (National Cancer Institute, 2021). Cancer can start nearly anywhere in the body.

Skin Cancer: In this study, skin cancer will specifically refer to melanoma skin cancer, a type of skin cancer that grows quickly and has the potential to spread to the organs (Cleveland Clinic, 2021).

Depression: According to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013), depression is a mood disorder with patients experiencing an array of depressive symptoms including, but not limited to, depressed mood including feeling sad, empty or hopeless, loss of interest or pleasure, and insomnia or hypersomnia most days.

Comorbidity: The existence of more than one medical disease or condition at one time within the body, which are frequently chronic and may or may not interact with each other (WebMD, 2021).

Limitations

Limitations, challenges, and/or barriers that may exist in this research study include being able to make generalizable inferences from data that are self-reported.

Also, because I investigated the impact of insurance status on the ability to access mental health care in the United States, generalizability of the results beyond the United States may not be possible due to international differences in healthcare systems and insurance.

Limitations from cross-sectional studies such as this one include the inability to draw conclusions about causality and to study trends. Regarding causality, although two variables may be found to be correlated in a cross-sectional study, it is not at all possible to conclude that one variable caused the other in that study (Taris et al., 2021). Regarding trends, since a cross-sectional study collects data at only a single point in time, it is not at all possible to study trends in that study (Taris et al., 2021). These limitations of cross-sectional studies may lead to more questions than answers, as the researcher is not often able to explain why or how an effect occurred and does not actually observe the dependent variable changing. (Wang & Cheng, 2020).

The National Health Information Survey (NHIS) is a population-based survey of U.S. adults conducted annually by the CDC. While the CDC NHIS database is an invaluable resource for understanding relationships among different variables, understanding the limitations helps the researcher to make valid inferences. Not taking these limitations into account can lead to potential problems, such as biased estimates and spurious inferences. First, when using self-reported data such as NHIS data, the definitions used for operationalization of variables may differ from the definitions used and validated in clinical research. Second, several types of bias, including nonresponse and recall bias, can contribute to misclassification and impact results when collecting self-reported data (Nikolopoulou, 2022). Third, differences in regional and state-specific policy landscapes can produce varying degrees of healthcare utilization, leading to

differing disease prevalence rates by geography (Remme et al.2021). And lastly, because NHIS uses a household-based sample, the potential for selective participation among households could result in under- or oversampling of certain population groups.

Significance

My goal for this study was to show whether there was an association between access to depression medication (as indicated by whether the patient is taking or not taking depression medication) and health insurance status and type among breast, colorectal, skin, prostate, and/or lung cancer patients. The differences found between those with and without insurance and/or between those with private vs. public insurance, could suggest that health insurance influences whether a cancer patient is able to seek mental health treatment. These differences may demonstrate unequal access to mental health care, suggesting that having insurance vs. not having health insurance and/or having private vs. public insurance may create opportunities for a better overall care experience, reduced burden of disease, and better quality of life.

Information from this study can be used by policymakers to address unequal access to care that patients have based on their insurance status and/or their type of insurance. In addition, the findings may be useful for oncology providers regarding the lack of access to mental health care that some patients endure and help these providers to be more aware of those cancer patients who might have mental health disorders, something they are often untrained to assess and treat. Oncologists may be prompted to seek additional training in recognizing mental health disorders and could focus needed attention toward the prevalence rates of comorbid cancer and depression, a topic critical to improving the life of those living with cancer.

Summary

Over half of the people in the United States who need behavioral health care lack it (Mental Health America, 2022). This deficiency has several root causes that ultimately stem from a lack of access, which is often an issue among patients that either do not have insurance or have insufficient insurance coverage.

In this chapter, I provided an introduction, including the background of the study and some initial findings from the literature review. The public health significance of the topic, and the issue of disparate access by insurance coverage were discussed. A brief summary of the theoretical model and the methodology of the study were introduced.

Chapter 2 includes a review of the literature, including the known impacts of cancer and comorbid depression, and how this disease state is impacted by a patient's insurance status. Chapter 3 includes a discussion of the research methodology, and Chapter 4 includes the study's results. Chapter 5 will conclude the paper and includes a discussion of the results and their possible implications, as well as recommendations for future research.

Chapter 2: Literature Review

Introduction

Access to treatment for depression can be severely limited, as less than half of depressed adults in the United States receive any form of treatment for their condition (Zhdanova et al., 2021). Consequently, cancer patients dealing with comorbid mental health conditions such as depression may encounter significant challenges in locating and obtaining adequate mental health services. This lack of access to depression treatment is partly attributed to the strict limitations imposed by insurance companies, including Medicare and Medicaid, on mental health service delivery. Medicare and Medicaid have lower reimbursement rates and higher administrative burdens for mental health services when compared to commercial insurers (PursueCare, 2024). Commercial insurance also runs into access barriers, as some commercial insurance companies impose limited network adequacy, meaning there is an inadequate number of providers within the insurer's network. This limited network adequacy is largely the result of low reimbursement rates which frequently discourage mental health providers from participating in the insurer's network, thereby reducing access for patients (The Kennedy Forum, n.d.; Rapfogel, 2022). This lack of providers means that patients cannot access psychiatrists, psychiatric nurses, psychologists, and other mental health professionals within their insurance network and are therefore forced to pay high costs to see these types of providers out of network.

Lack of access to depression treatment is not only impacted by insurance but can also be a significant issue for uninsured individuals. Many people with mental illnesses face barriers to getting the help they need and many of these patients are uninsured or

have insufficient insurance coverage. The primary challenge for many people in this population is the high costs of services (Donohue et al., 2024). Without insurance, these costs are often unaffordable, further limiting access to care for those who need it most. Patients' access to mental health care is to a large extent determined by their insurance coverage or lack thereof (Donohue et al., 2024).

Despite restrictions on mental health coverage significantly impacting cancer patients dealing with depression, the connection between insurance coverage and the accessibility to care remains largely unexplored in this specific patient group. The ability of patients to access mental health care and receive the most effective treatment may be severely hampered when practitioners will not accept certain insurances due to their lower payment rates and excessive administrative demands. This, compounded by the limited availability of providers, have important implications for the quality of mental health care available and received. Patients with depression often experience greater functional limitations, reduced quality of life, and a decline in role functioning compared to individuals with chronic medical conditions, further restricting their access to helpful and restorative health care (Hammer-Helmich et al., 2018).

The concept of access to health care is multifaceted and complex. The National Comprehensive Cancer Network (NCCN) acknowledges that attaining appropriate mental health treatment is essential for achieving depression remission and has issued clinical practice guidelines in oncology that prioritize achieving complete depression remission in cancer patients as the primary objective of mental health treatment, aiming to minimize suffering and maximize the likelihood of receiving high-quality care for cancer patients (National Comprehensive Cancer Network, 2024). However, considering the close

connection between depression and cognitive impairment as well as diminished functional abilities (Hammer-Helmich et al., 2018), a significant concern arises regarding whether cancer patients with depression can access effective cancer treatment, as well as treatment for depression, actions that necessitate a higher level of cognitive and physical well-being. Patients must be in a reasonably good state of mental and physical health to endure the demanding cancer treatment process, which may not be the case for individuals with depression. Research has indicated that cancer patients with depression have higher healthcare services utilization and expenses for medical needs related to physical health, more advanced cancer at the time of diagnosis, and lower cancer survival rates than those without depression (Cho et al., 2022; Sasseville et al., 2021).

Depression exerts profound and debilitating effects on patients' daily functioning and quality of life (WHO, 2024) as well as the ability to adhere to cancer treatment (Sancassiani et al., 2023). Despite the recognition of depression as a serious comorbid condition with detrimental impacts on treatment outcomes in cancer patients, there remains a dearth of knowledge regarding how depression affects access to quality cancer care for these individuals.

Literature Search Strategy

I searched 61 databases in the Walden University library using the key words *insurance or payer or payor, breast or lung or prostate or skin or colorectal, cancer, depression, United States or America or USA or U.S., and not rehabilitation or muscle or chiropractic* among peer reviewed scholarly journals, with publication years limited to 2019-2023. I also reviewed Google Scholar for additional articles published during those same years. The articles that appeared pertinent to the research questions were selected,

and the key information including title, author, date of publication, name of journal, and abstract were then put into an Excel spreadsheet for tracking purposes to ensure key information about the articles was included in the final document.

Theoretical Foundation

In research, theory plays a crucial role in predicting outcomes (University of Southern California, 2024). Theories are constructed as frameworks to investigate, identify, and explain any relationships among variables as well as explain why a phenomenon exists and how it came to be (University of Southern California, 2024). Theoretical frameworks are used to guide the research process toward understanding phenomena and formulating hypotheses (University of Southern California, 2024), identify unexplored areas, and guide the development of the appropriate research questions, planning the analysis, and interpreting the results.

The HBM is the most widely leveraged model for explaining health-related behaviors and can be focused on either health promotion or disease prevention, with the model's primary strengths being its focus on belief systems, and its utilization of a wide range of behavioral concepts (Du et al., 2019; Sulat et al., 2018). The HBM suggests that people may take a health-related action (this can be preventive or therapeutic) if they feel that a negative health issue can be avoided (positive belief) However, other factors, including age, gender, socioeconomics, knowledge, etc. along with individual beliefs may ultimately impact the cue to action. Components of the belief system for a cancer patient with depression may include believing oneself to be at risk of depression before getting screened (perceived susceptibility), belief of the physical seriousness and social consequences of depression which may include societal stigma (perceived severity), and

belief that there are barriers to acting, such as cost or inconvenience of accessing care (perceived barriers; Glanz et al., 2015). However, patients may also recognize perceived benefits, or positive features, to being screened and treated for depression. Perceived benefits are those which reduce the consequences associated with having a disease (Glanz et al., 2015) and, for cancer patients with depression, could include an improved quality of life.

The HBM can be applied to address the needs of cancer patients with depression. For example, the HBM suggests that individuals are more likely to act if they perceive themselves as susceptible to a health condition (Glanz et al., 2015). For cancer patients with depression, healthcare providers can emphasize the potential negative impact of untreated depression on their overall well-being and quality of life. By highlighting the link between depression and cancer outcomes, patients may be motivated to seek appropriate treatment. In addition, cancer patients with depression may underestimate the severity of their mental health condition or fail to recognize its impact on their physical health and overall quality of life. To address this, healthcare providers can educate patients about the detrimental effects of untreated depression, such as decreased cancer treatment adherence, compromised immune function, and reduced quality of life. By highlighting the potential consequences, healthcare providers could potentially make patients better informed and encourage them to act and adopt health behaviors that they believe will provide tangible benefits, such as improved mood, enhanced coping skills, better treatment outcomes, and an overall improvement in quality of life.

The HBM is just one framework among several that can be used to understand and address the needs of cancer patients with depression. Most theoretical approaches

that consider individual patient preferences, cultural factors, and the expertise of healthcare providers in designing tailored interventions that promote mental health and well-being in the context of cancer care could benefit this population. However, I chose the HBM for this research study due to its grounding in the field of psychology as a means to explain and predict individual behaviors related to health decision making.

Literature Review

Disparate Access to Care

Disparities in access to depression treatment among cancer patients, particularly in marginalized groups, have been a significant concern in healthcare. Studies have shown that factors such as race, ethnicity, socioeconomic status, and access to healthcare play crucial roles in determining the quality of depression care received by cancer patients (Zou & Zhu, 2022). For instance, racial and ethnic disparities in cancer survival, a frequent indicator of quality care, have been linked to unequal access to care and delivery of recommended treatments (Parikh et al., 2021). However, less research exists to examine the role of access as it relates to a patient's insurance and ability to pay for comorbid cancer and depression treatment.

Despite there being a higher prevalence of depression following a cancer diagnosis in racial minority groups, lower antidepressant use has been observed in these same groups, suggesting that increased attention from both medical practitioners and policy makers is needed (Zou & Zhu, 2022). In their study of unequal access, Zou and Zhu (2022) assessed disparate patterns of antidepressant use among adult cancer survivors in the United States, focusing on demographic characteristics and access to healthcare. The researchers found disparate access to antidepressants among cancer

survivors based on race, with reduced access among racial minorities, as well as finding that those patients who did not have a consistent place to access healthcare were less likely to be taking antidepressants. However, the study did not determine any disparate access based on insurance status (Zou & Zhu, 2022).

Research has highlighted that disparities in depression treatment may include both unequal access to care and unequal receipt of treatment. While Zou and Zhu (2022) only investigated and found differences in demographic characteristics and in healthcare location as factors contributing to disparities in receipt of treatment for depression, other studies have pointed out that provider biases, as well as patient characteristics, distrust, perceptions, beliefs about cancer, and limited access to subspecialty care can all contribute to disparities in receipt of depression treatment (Hostetter & Klein, 2021; Parikh et al., 2021).

Wasserman et al. (2019) highlighted the current status of the American healthcare system to discuss flaws that impact care and quality as they relate to disparate populations, noting that such research is needed to inform policymakers on reducing healthcare disparities. The authors reviewed work that had been done in the last decades, commenting on the lack of progress that had been achieved in reducing healthcare disparities, despite publicly available data demonstrating a lack of uniformity in quality treatment for all populations that use the American healthcare system. In addition, the authors discussed new delivery models that had been embraced by payers and providers, as well as payment reform systems that had been passed through legislation. Specifically, the authors reviewed current initiatives in the American healthcare landscape to reduce and eliminate healthcare disparities, noting that it is essential for the

healthcare system to provide access, remove barriers, and deliver effective treatment that is equal for all, in order for health equity to be achieved (Wasserman et al., 2019).

Prevalence of Cancer and Comorbid Depression

Cancer is among the leading causes of death worldwide (World Health Organization, 2024) and one of the most studied ailments among health researchers (Bilodeau, 2024). With two million new cases and 611,000 deaths each year in America alone, cancer's impact is widespread and pervasive (National Cancer Institute, 2024). Breast, prostate, colorectal, lung and melanoma skin cancer represent the top five cancers by prevalence in the United States (National Cancer Institute, 2024). Despite significant success with public health campaigns to reduce smoking, lung cancer continues to be the leading cause of cancer death among both genders (National Cancer Institute, 2024).

The co-occurrence of mental health conditions such as depression alongside chronic diseases like cancer adds to the global burden of increased healthcare use and costs as well as lower quality outcomes and reduced quality of life for patients (Cho et al., 2022; Sasseville et al., 2021). Patients with chronic health conditions including cancer are two to three times as likely to have an accompanying mental health condition, such as depression or anxiety, as those without chronic health conditions (Sasseville et al., 2021). Among cancer patients, understanding the exact prevalence of comorbid depression is difficult. While cancer research is robust, less research exists on how other diseases, including those of mental health, overlap and interact with cancer and on what impact insurance status has on those comorbid conditions. Among mental health conditions, depression and anxiety are among the most pervasive in the United States (Omari et al., 2023; National Alliance on Mental Illness, 2023), with or without a cancer diagnosis, and

prevalence rates have been increasing for both mental health ailments (Mejareh et al., 2021; Zoorob et al., 2019). Over 31% of American adults are afflicted with an anxiety disorder sometime during their lifetimes (Anxiety and Depression Association of America, 2022), and approximately 21% of American adults are afflicted with major depression sometime during their lifetimes (National Institute of Mental Health, n.d.). For this reason, it becomes more important than ever to understand the intersection of these diseases with cancer. While this research study will be conducted using American healthcare data from the CDC, it is important to note that prevalence of comorbid depression among cancer patients differs around the world, and there is considerable variation in the reporting of comorbid cancer and depression rates. For example, while some studies report lower rates, such as a 2022 British study which found that about 10% of cancer patients who leverage a cancer clinic for their oncology care have depression (Walker et al., 2022), the frequently cited 2013 meta-analysis by Krebber et al. found the prevalence of depression among cancer patients to range from 8% to 24%, dependent on the type of cancer, instrument used to assess depression, and cancer treatment phase of the particular study (Krebber et al., 2013). A recent meta-analysis by Mejareh et al. (2021) found that countries other than the United States had depression prevalence rates among cancer patients as high as 43%, that there were vast differences between countries, and that the average rate among the 183 studies assessed was about 27% (Mejareh et al., 2021). According to Krebber and colleagues (2013), this is primarily due to varying types of cancer, varying instruments used to assess depression, and varying phases of cancer treatment in the different studies.

Breast Cancer

Breast cancer, the most common form of cancer in women and the most highly funded across the globe (McIntosh et al., 2023), is also the most widely researched type of cancer (McIntosh et al., 2023), making it the easiest for which to find literature. Numerous studies point to the impact of comorbid depression on breast cancer patients and the need to address this comorbid depression with proactive interventions. However, much of the research that has been done has not dealt with specific proactive interventions for breast cancer patients with comorbid depression but merely pointed out the need for them, leaving room for future research on specific proactive interventions, which might include depression screening and/or treatment for breast cancer patients. Hahn and colleagues (2022) stated that science-based approaches for depression screening in oncology patients are largely understudied, and that sustainable program implementation (i.e. referrals to treatment) is limited. In their work, they evaluated the effectiveness of a depression screening program among 1,436 eligible study participants who were newly diagnosed breast cancer patients in a community setting using a randomized clinical trial aimed at determining whether routine screening for depression could increase referrals for behavioral health services among breast cancer patients. The patients were randomized into two groups, the intervention group which worked with clinicians who were given strategies consisting of active depression screening which they implemented on the patients in that group, and the control group, which worked with clinicians who only received education about screening opportunities and therefore only screened patients for depression at their own discretion rather than through an active screening process (Hahn, et al., 2022). The primary outcome for both the control and

intervention groups was the percent of study participants who were referred for behavioral health services. In total, 7.9% of patients in the intervention group were subsequently referred for mental health treatment, while only 0.1% of patients in the control group were referred. The findings suggested that implementing a depression screening program in oncology settings could significantly increase the likelihood of patients being referred for behavioral health support, potentially improving overall mental health outcomes in this population. The authors suggested that further research could better determine the clinical value and cost effectiveness of implementing such screening (Hahn, et al., 2022).

Several studies reviewed in this research indicate the impact of depression on patients with breast cancer, but a 2021 study by Yazgan and Chagpar focused upstream on preventive aspects of breast cancer. The study explored how emotional disorders impacted women's adherence to recommended mammography screenings. The researchers found that women with emotional disorders, such as anxiety or depression, were less likely to follow guidelines for screening mammography, a preventive practice associated with improved survival among breast cancer patients ages 50 to 74 whose breast cancer was initially discovered on a screening mammogram, compared to those without such emotional disorders (Yazgan & Chagpar, 2021). The authors found that the reluctance to obtaining a screening mammogram was associated with having an emotional disorder but was also impacted by socioeconomic factors, including access to healthcare, insurance status, and income, and after controlling for these socioeconomic factors, no differences in mammography screening adherence were found between those having and not having emotional disorders. The authors noted that previous studies had

found those from low-income households to be less likely to be proactive about their healthcare, including being less likely to follow-up with cancer treatments and more likely to miss appointments. Those low-income patients were also found to have trouble affording their medications and to be less likely to have healthcare for their emotional issues (Yazgan & Chagpar, 2022). The study highlights the importance of addressing emotional health as a factor in improving adherence to screening practices, suggesting that support and other interventions targeting emotional well-being could enhance screening rates and, consequently, early detection of breast cancer (Yazgan & Chagpar, 2022).

Cho et al. (2022) explored whether there were associations between several conditions, including diabetes, obesity, menopausal symptoms, and depressed mood, and the initiation and continuation of endocrine therapy, also known as ET, a treatment known to significantly reduce recurrence and mortality from cancer, in breast cancer patients. Leveraging logistic regression models, the researchers found breast cancer patients with either diabetes or menopausal symptoms to be less likely to both initiate and continue endocrine therapy than those without either diabetes or menopausal symptoms, after controlling for age, race, and insurance status (Cho et al., 2022). The researchers also found that the patients with depressed mood were neither likely to initiate nor continue endocrine therapy, but when they stratified by race, white patients with depressed mood were less likely to continue endocrine therapy (Cho et al., 2022).

Mental health comorbidities can negatively affect the prognosis of breast cancer patients and increase breast cancer-related mortality (Zoorob et al., 2019). Zoorob and colleagues (2019) conducted a 13-year, serial cross-sectional analysis and performed

logistic regression using data from the National Inpatient Sample (NIS) from 2002-2014 to assess patients with breast cancer who also had depression and other chronic comorbidities. Serial cross-sectional analyses are those in which data from the same study population are collected and analyzed at different points in time (Pandis, 2014) and allow the researcher to analyze changes in the study population at different time periods. The Zoorob study found the prevalence of depression to be higher among the 2.3 million women in the samples at 10.5% than among the 21,000 men in the sample at 7.5%, but the burden of comorbidity was nearly twice as high for men (Zoorob et al., 2019). In addition to finding depression rates in breast cancer patients to be higher than in the general inpatient population, the authors also found depression rates to be highest among breast cancer patients with four or more chronic comorbidities, as well as among those with unplanned hospitalizations (Zoorob et al., 2019).

A study by El Kherchi and colleagues (2021) evaluated psychological disorders such as depression and anxiety among Moroccan women who were all being treated for breast cancer at the same cancer center. Using a questionnaire based on the Hospital Anxiety Depression Scale (HADS), the Pittsburgh Sleep Quality Index (PSQI), and the Body Image Scale (BIS), the research team found that 69% of the patients had sleep disorders, 87% had anxiety-depressive symptoms, and 83% had significant dissatisfaction with their bodies (El Kherchi et al., 2021). The authors found that low-income patients having Morocco's national health insurance for low-income citizens were more likely to have anxiety-depressive symptoms than those patients with private insurance. The authors state the country of Morocco is addressing socioeconomic disparities by introducing new strategies in oncology care to reduce anxiety and depression (El Kherchi

et al., 2021). These strategies, if found to be beneficial, could perhaps be leveraged in the United States to enhance cancer care by reducing the comorbid burden of mental health conditions. However, El Kherchi and colleagues did not provide detail on the strategies used in Morocco to reduce anxiety and depression among oncology patients within this study. The authors stated that despite significant advances having been made in the treatment of breast cancer, advances to treat comorbid mental health conditions such as depression in breast cancer patients have not kept pace, despite the negative impact of these comorbid conditions on the patients' lives. (El Kherchi et al., 2021).

Patients with cancer are often impacted financially due to inability to work, which in extreme cases could lead to termination of their employment and losing their health insurance coverage. The increased stress due to these challenges is often a trigger for reduced quality of life. A 2020 study by Cook and colleagues found that breast cancer patients who reported lower household incomes were more likely to report health insurance problems during their treatments. In addition, younger women were more likely to report lower quality of life and higher stress levels than their older counterparts both at the time of diagnosis as well as over the long term, since invasive breast cancer is more likely to be found in younger women, those under age 40, and breast cancer is the most common cancer in women ages 15-39 (Cook et al., 2020).

Lawrence et al. (2021) examined the influence of preexisting mental illnesses such as depression on mortality rates in Medicaid-insured women diagnosed with breast cancer and found that those with a severe preexisting mental illness had both greater all-cause mortality rates and cancer-specific mortality rates than those with no mental illness. However, there was no association found between preexisting depression and these

mortality rates (Lawrence et al., 2021). Based on their findings, the authors suggested that clinical teams consisting of practitioners from different disciplines who address various aspects of care in order to monitor and evaluate all aspects of the health continuum, including mental health, be considered for women with breast cancer diagnoses (Lawrence et al., 2021).

Prostate Cancer

Sharpley, Christie & Bitsika's (2020) study reviewed current literature on prostate cancer patients with depressive disorders. The authors examined clinical implications for urologists and oncologists of treating depression, including improving the assessment and treatment of depression in men with prostate cancer, and stated that depression screening and diagnosis should be integrated aspects of cancer treatments, since severe depression can negatively impact the treatment and outcomes of cancer patients, including those with prostate cancer. The authors acknowledged that different subtypes of depression (e.g., anhedonia, somatic depression, cognitive depression) can make diagnosis and treatment of the depression a challenge for non-mental health clinicians, such as urologists and oncologists. The authors discussed recommendations for clinical practice and stated that there is a lack of agreement among oncologists on what to screen for and what instruments to use in screening for depression in cancer patients. This study helps to verify the need for further understanding of depressive disorders among those in clinical cancer care by focusing on the lack of research related to the recognition and treatment of depression among providers.

Chhatre and colleagues (2023) re-analyzed data from a randomized controlled trial to track changes in depressive symptoms throughout the course of cancer treatment

in patients with localized prostate cancer and found statistically significant increases in both depression and regret among the patients over time, and that many of them experienced long-term depression. (Chhatre et al., 2023). The findings revealed fluctuation in the depression levels, with notable periods of increase or decrease related to different phases of treatment and patient responses. The authors stated that psychological concerns, such as depression, among cancer patients are known, but that the long-term effects are understudied. The authors discussed the importance of monitoring and addressing depression throughout the cancer journey, suggesting that targeted interventions could improve mental health outcomes for prostate cancer patients. The authors also suggested that patient-centered care techniques should be incorporated into cancer care to reduce depression and improve the outcomes of care in patients with prostate cancer (Chhatre et al., 2023).

Interaction of Cancer and Depression

Research has consistently shown that comorbid mental health conditions including depression have an overall detrimental effect on a cancer patient's treatment trajectory and overall wellbeing, noting increases in premature death, increases in healthcare utilization, and a reduction in general quality of life (Babey et al., 2021; Sharpley et. al., 2020). With the physical and emotional impacts of cancer taking a toll on patients, it is easy to understand why oncology patients may be prone to depression. Comorbid depression in cancer patients decreases their quality of life (Walker et al., 2014), reduces their ability to tolerate cancer treatment medications and protocols (Walker et al., 2021), and reduces their survival rates (Colleoni et al., 2000).

A study by Babey and colleagues (2021) examined the prevalences of multiple chronic conditions, including mental health issues and obesity, among patients who used Health Resources and Services Administration (HRSA)-funded health centers in the US. The study highlighted the concurrent burden of these health conditions, emphasizing the complex challenges faced by individuals dealing with multimorbidity and mental health issues compounded by severe obesity. The study found that over half of the patients were obese, and nearly half of those also had a comorbid mental health condition. Finding innovative approaches to treatment for complex medical conditions is critical to longevity and quality of life. Medically complex patients, such as those with cancer, need behavioral health treatment for both the medical and emotional aspects of their condition. By treating both the medical and emotional aspects, medical providers can reduce patient costs and help the patient to achieve better overall wellness. This research underscores the need for innovative approaches for complex health conditions, including integrated healthcare approaches that address these interconnected health issues comprehensively.

Gu and Shen (2020) examined how depression as a comorbid condition affects healthcare costs, considering factors such as hospitalizations, outpatient visits, and medication expense, for vulnerable elderly patients with newly diagnosed cancer. Breast, lung, and prostate cancer patients over the age of 65 were the subjects of this retrospective cohort study which leveraged surveys from the Medicare Current Beneficiary Survey (MCBS) datasets from 2007 to 2012. The data captured patient depression status through self-reports and indicated that nearly 18% of the patients had self-reported depression. This study leveraged generalized linear models and found higher expenses for both providers and services in those with depression compared to

those without depression and determined that high medication expenses significantly contribute to medication nonadherence, particularly in individuals with depression who may face additional challenges in managing their health (Gu & Shen, 2020). Also, significantly more of the cancer patients who also had a diagnosis of comorbid depression were found to have received inpatient medical services than those without a comorbid depression diagnosis (Gu & Shen, 2020). The research aimed to understand the economic burden and healthcare utilization patterns associated with depression in elderly cancer patients, providing insights into potential strategies to support elderly cancer survivors by addressing both mental health care and cost management.

DeClue and colleagues (2020) investigated a claims-based mechanism for identifying patients with metastatic non-small cell lung cancer who have had high levels of cancer-related symptoms, including depression, fatigue, pain, and problems sleeping. Using a survey sent to patients who enrolled in a Medicare Advantage health plan within three months of treatment for non-small cell lung cancer, the researchers measured the patient-reported symptoms listed above with the goal of determining whether patients with any of these symptoms might benefit from supportive programs (DeClue et al., 2020). The authors divided the patients into two groups, those with less severe symptoms and those with more severe symptoms and found that identification of those patients in the more severe group could lead to enhanced healthcare supports, including help with symptom management and referrals to outside resources and programs that might support their physical and mental health needs (DeClue et al., 2020). In addition, patients in the more severe symptoms group were more likely to be dually eligible for both Medicaid and Medicare, be younger than age 75 and be more likely to have filled prescriptions for

opioids. Despite progress in cancer research, cancer continues to be a painful and difficult to treat disease for many patients. The identification of patients who may be able to benefit from clinical programs that address symptoms such as those of depression, improve cancer outcomes, and enhance quality of life remains an important area for further research (DeClue et al., 2020).

Barriers and Access to Depression Screening

Dai and colleagues' 2023 research found a lack of recognition and treatment of psychiatric disorders by healthcare providers. The authors hypothesized that this was likely due to a lack of time and training, each of which potentially leading to both under-recognition and under-treatment. In this research, the authors evaluated the incidence and prevalence of several mental health conditions, including anxiety and depression, in patients who were newly diagnosed with breast cancer with the goal of assessing costs and healthcare utilization. The study found that 38.2% of newly diagnosed breast cancer patients experienced mental health disorders such as depression and that the patients who experienced these mental health disorders utilized more healthcare resources, such as hospital admissions and outpatient visits, which led to higher costs, compared to those without such disorders (Dai et al., 2023). These findings underscore the importance of addressing mental health needs alongside medical treatment to potentially reduce healthcare utilization and improve outcomes in breast cancer care.

Role of Insurance in Access to Depression Treatment

Research has demonstrated disparities in the quality-of-care patients receive based on insurance type (Agency for Healthcare Research and Quality, 2021). Patients with public insurance may encounter provider reluctance to treat them, particularly when the

patients suffer from a mental health condition, or the provider has a full patient load and has to be selective in which patients to see (Wen et al., 2019). These challenges are often related to provider reimbursement rates, which tend to be lower than with commercial insurance, potentially affecting the quality and quantity of services rendered (Giliberti, 2023). Those with private insurance plans often have broader coverage for mental health treatment compared to individuals with public insurance plans like Medicaid (Giliberti, 2023). As a result, privately insured patients may have an easier time accessing therapy or medications for depression, and those with more comprehensive private insurance plans may have fewer financial barriers such as affordable copayments to accessing mental health care than those with public insurance plans such as Medicaid. Private insurance plans that are more comprehensive allow for a wider network of providers, thereby increasing the likelihood of being seen in a timely manner by an in-network provider, and the costs remain lower since many Medicaid patients are forced to seek out of network care with higher copays. Costs not covered by insurance can also be a significant barrier to treatment for mental health patients as patients with high deductibles or copayments may be less likely to seek treatment for depression due to concerns about out-of-pocket expenses (Giliberti, 2023).

Provider networks vary among insurers and are defined by the Centers for Medicaid and Medicare Services (CMS) as the list of healthcare providers, such as physicians and hospitals, which are contracted by an insurer to provide medical care to its members (Centers for Medicaid and Medicare Services, 2024). Some insurance plans have limited networks of mental health professionals, which can restrict a patient's options when seeking treatment. Patients with private insurance plans may have more

choices in terms of providers (Giliberti, 2023). Limiting care to only specific providers may heavily impact how soon a patient is able to access care as well as how far a patient may have to travel to see a provider.

The availability of different treatment options may vary based on insurance coverage. For example, whether specific medications or therapies are covered vary by type of insurance, as do the number of therapeutic sessions permitted (Mental Health America, 2024). The type of insurance also can lead to variations in how quickly a patient can access mental health care (Mental Health America, 2024). In fact, longer wait times for appointments and more limited availability of mental health professionals have been demonstrated to occur more frequently in those with no insurance (Sun et al., 2023). Conley et al. (2022) investigated how socioeconomic factors influence the recommendation and utilization of psychosocial services among young, black, breast cancer survivors. They found significant disparities, as breast cancer survivors with lower socioeconomic status (SES) were less likely to receive recommendations for these services than those with higher SES. In addition, even among those who received recommendations, those with lower SES were less likely to utilize the services due to limited access to resources and support networks. These findings underscore the need for targeted interventions to ensure equitable access to psychosocial support for all breast cancer survivors, particularly those facing socioeconomic challenges.

Research Gaps

Despite there being about 234,000 new cases of lung cancer, 106,000 new cases of colorectal cancer, and 100,000 new cases of melanoma skin cancer annually in the United States (American Cancer Society, 2024), no studies focusing on any of these

cancers were found that were published within the timeframe specified for the literature search that also included depression and insurance status as variables. This indicates a significant gap in research that seeks to understand how patients with these three highly prevalent cancers are impacted by depression and the possibility of lacking access to treatment.

For several types of cancer, including colorectal, skin, and lung, there are significant gaps in research on the topic of disparate access to depression treatment for oncology patients. The specific issue of insurance in relation to this topic has been sparsely investigated, thus providing a tremendous need and opportunity for research. With American healthcare being so expensive, and many patients being totally reliant on insurance to obtain appropriate treatment, determining which insurance provides better or worse access to care should be a research priority. As noted, breast cancer has been the most heavily researched cancer, but no research was found on insurance in relation to disparate access to depression care in breast cancer patients.

Summary and Conclusions

Disparities in access to depression treatment among cancer patients is a complex issue influenced by various social, economic, and healthcare-related factors. Addressing these disparities requires a multi-faceted approach that considers the unique needs of, and challenges faced, by different patient populations to ensure equitable access to quality care. While research has demonstrated unequal access across several groups, including those defined by SES, race, and gender, no research has been found within the timeframe set by this researcher to examine disparate access to treatment for depression in cancer patients with comorbid depression through the lens of their health insurance coverage.

Chapter 3: Methods

Introduction

The purpose of this study was to explore differences in taking medication for depression based on health insurance status and type among cancer patients. The implications for a cancer patient of not seeking treatment for comorbid depression can be significant, leading to increased healthcare costs and utilization, as well as a lower overall quality of life and earlier mortality.

The findings of this study will contribute to the understanding of the health insurance status of the patient who is at higher risk of not being able to easily access needed treatments. In the United States, the opportunity to have and maintain health insurance coverage varies widely by a person's SES and often reflects the person's education and employment. Those with lower levels of education and employment may not have the same opportunities to have adequate health insurance coverage to protect against high medical bills when faced with life threatening illnesses such as cancer. Medical practitioners, including oncologists and mental health therapists, may have an opportunity to work alongside each other when patients have positive depression screenings or for patients who exhibit symptoms of depression. Disparities in SES found in this study may encourage medical practitioners to take additional steps to ensure access to care for those with inadequate insurance coverage, thereby improving their overall health and longevity.

In this chapter, I will discuss the research design of the study. I will also discuss the eligibility criteria for the study participants as well as the sampling procedures I used

to obtain Data. I will also discuss the power analysis and data analysis plan will be presented. This chapter will conclude with ethical considerations.

Research Design and Rationale

This study will leverage publicly available data from the CDC's internet-based NHIS, focusing on the years 2019-2022. The NHIS dataset is composed of self-reported information on health, health behavior, and health care access for the non-institutionalized American population (Blewett et al., 2023). Since 1957, the CDC has used the NHIS household survey to help monitor the health of the American population (Blewett et al., 2023). Over the years, NHIS data have been used to monitor progress toward the nation's health objectives as well as to track overall health status and access to healthcare (Blewett et al., 2023). The survey is distributed among all 50 U.S. states and the District of Columbia, with data being continuously collected all year long (Blewett et al., 2023).

NHIS data are a vital resource that can be leveraged for a wide range of applications from policy development to operational management. According to the CDC, surveys such as the NHIS can be used to answer key questions from stakeholders such as researchers, policymakers, and other public health professionals (Centers for Disease Control and Prevention, 2023). By harnessing this data, stakeholders can drive improvements and enhance outcomes in public health and achieve greater efficiency and equity in healthcare systems. The use of this dataset is also intended to minimize the data collection efforts and costs required to conduct this research. I chose the year 2019 as the earliest year's data to be used, because the NHIS questionnaire was redesigned in time for that year's data collection. Researchers could potentially encounter some data

comparability problems if leveraging data collected before and after this redesigning of the questionnaire (U.S. Department of Health and Human Services, n.d.).

I used a cross-sectional design to determine whether health insurance status and type has an effect on taking or not taking medication for depression in breast, prostate, lung, colorectal and skin cancer patients. I used this quantitative analysis to determine whether any differences in taking medication for depression exist in breast, prostate, lung, colorectal, or skin cancer patients based on their insurance status and type.

Methodology

Population

The study population consisted of American adults who completed the NHIS home survey during the period of 2019 to 2022, indicated they had been told they had one of the types of cancer being studied and answered the question about taking medication for depression. The NHIS does not have questions which specifically ask about having a diagnosis of depression and having access to treatment for depression. However, there is a question which asks whether the individual takes medication for depression, and this will be used as a proxy for the combination of whether the individual has a depression diagnosis and, if so, whether he/she has access to treatment for depression. The NHIS has a question which asks whether the individual has ever been told that he/she has cancer and if so what type of cancer. Only those individuals indicating that they have been told they have breast, lung, prostate, colorectal, and/or skin cancer were included in the study.

Although the NHIS targets both children and adults, this study was limited to persons aged 18 and older. Both men and women were included, but individuals with

ambiguous responses to the gender question were excluded. Subjects were only included when a clear response was present to all health information questions being asked, eliminating unclear responses such as “unknown.” Subjects who provided “unknown” as a response to any question about taking medication for depression, having a cancer diagnosis, or insurance status were excluded from analysis.

Sampling and Sampling Procedures

I used 4 consecutive years of secondary data, from 2019-2022, from the NHIS in the study. The survey response rates were 27.2% for 2019, 24.7% for 2020, 24.9% for 2021, and 23.2% for 2022.

Procedures for Data Collection

Permission is not needed to download and use NHIS data, and there is no fee associated with their use. Relevant datasets as well as instructions on how to extract the downloaded data can be found on the IPUMS website, which houses the NHIS database (IPUMS Center for Data Integration, n.d.). The data are downloaded in a compressed file format and then must be decompressed to be used. In order to accomplish that, the compressed data file was saved to a computer and then unzipped using a decompression application such as WinZip. In addition to this data file, the syntax or SPSS command file was saved to that computer and then opened in SPSS, and the line at the top of the SPSS command file that reads `cd "."` was found. The ".dat" data file was relocated to the computer's C drive where the command file was already be located. By doing this, SPSS could be used to find the proper file and access it. Clicking "Run" menu and selecting "All" allowed SPSS to read in the data.

Power Analysis

Calculating the sample size needed to provide the study with adequate statistical power, which is the probability of rejecting a null hypothesis when the null hypothesis is false, through a power analysis, is an essential aspect of a research study (Frost, 2019). Cohen (1988) stated that insufficient statistical power can yield low probability of making the correct decision and high probability of making a wrong decision, and it is therefore critical that a power analysis be done using reputable software to ensure that the sample size will be large enough to provide the study with adequate power. Statistical power of at least 0.80 has been recommended for psychological research by many experts and professional societies (Lenth, 2001). The American Psychological Association has recommended that the statistical power of a psychological research study should absolutely not be below 0.70 (Wilkinson & the Task Force on Statistical Inference, 1999).

G*Power software was used to determine the sample size required for this study to have a statistical power of 0.80 (see Figure 1). This software is a free internet download with directions embedded in the software, making it easy to install and use. In order to calculate sample size using G*Power software, the researcher must input several pieces of information (i.e. parameters) into the program including the statistical test which will be leveraged. Logistic regression was used as the statistical technique for this research to evaluate the relationship between the dichotomous outcome variable of taking medication for depression (yes or no) and the predictor variables which include the following:

- Health insurance status (Nominal: yes vs. no)

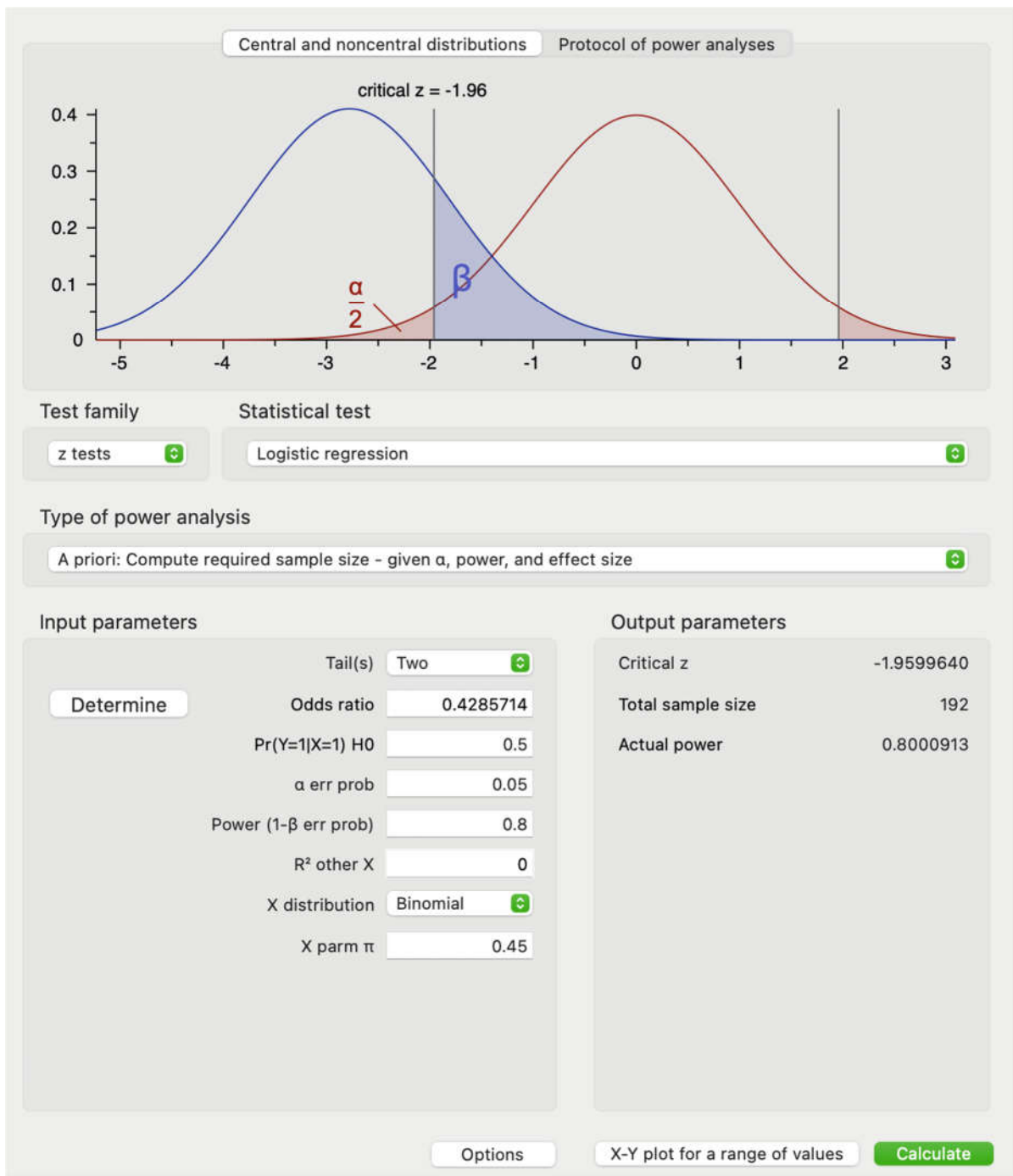
- Health insurance type (Nominal: public vs. private)
- Ever had cancer: Breast (Nominal: yes vs. no)
- Ever had cancer: Prostate (Nominal: yes vs. no)
- Ever had cancer: Lung (Nominal: yes vs. no)
- Ever had cancer: Colorectal (Nominal: yes vs. no)
- Ever had cancer: Skin Cancer (Nominal: yes vs. no)
- Age (Continuous)
- Sex (Nominal: male vs. female)
- Race (Nominal: White vs. Black/African American vs. American Indian/Alaskan
Native vs. Asian vs. Other vs. Multiple Race)

Next, the “test family” that was used had to be specified, as well as whether it would be one-tailed or two-tailed. In this study, I used two-tailed z-tests. The type of distribution was a binomial distribution, since the outcome variable is binary. The other five parameters of the program, including the odds ratio, the error probability, power, R-squared, and x parm π , are also entered and can be estimated based on similar research studies (Learn Statistics Easily, 2022). For the current study, a similar research study entitled the “Predictors of Depression Screening Among Cancer Patients in U.S. Ambulatory Settings” (Fawole, 2021) was leveraged for this purpose due to similarities in the overall research question and design, and as a result the following estimates were used for this study: odds ratio = 0.4285714, error probability = 0.05, power = 0.80, R-squared = 0, and x parm π = 0.45. Although Fawole (2021) used a power of 0.95, the

current study will suffice with a power of 0.80. Based on the inputted pieces of information, a minimum total sample size of 192 was determined.

Figure 1

Sample Size Calculation Using G*Power 3.1



Response options within the data included NIU, No, Yes, Unknown-refused, and Unknown-not ascertained, but several variables were recoded to only use yes and no responses. These variables included:

- Taking or not taking treatment for depression (“DEPRX”)
- Each of the insurance-related variables (“HIPUBCOV”, “HIPPRIVATE”, “HIMCAID”, “HIMCARE”)
- Each of the cancer variables (“CNBRES”, “CNSKMELN”, “CNCOLRECT”, “CNLUNG”, “CNPROS”)

The NHIS data that I used in this study are from cancer-related questions asking the survey participant whether a specific cancer had “been mentioned” by his/her physician. The survey does not specifically ask whether he/she has cancer. The cancer variables were renamed for easier identification. See Table 1.

Table 1*Data Dictionary*

Variable Name	Renamed Variable	Type	Width	Description
YEAR		NUMERIC	4	Survey Year
SEX		NUMERIC	1	Sex
				Self-reported Race
RACENEW		NUMERIC	3	(Post-1997 OMB standards)
HINOTCOVE		NUMERIC	1	Health Insurance coverage status
HIPRIVATE		NUMERIC	2	Has any private health insurance
HIMCAID		NUMERIC	1	Has Medicaid insurance
HIMCARE		NUMERIC	1	Has Medicare insurance
AGE	AGE_GROUPED	NUMERIC	1	Age
DEPRX		NUMERIC	1	Take medication for depression
CNBRES	BRSTCANCER	NUMERIC	1	Ever had cancer: Breast
				Ever had cancer:
CNCOLRECT	COLRECCANCER	NUMERIC	1	Colorectal cancer
CNLUNG	LUNGCANCER	NUMERIC	1	Ever had cancer: Lung
CNPROS	PROSTATECANCER	NUMERIC	1	Ever had cancer: Prostate
CNSKMELN	MELASKINCANCER	NUMERIC	1	Ever had cancer: Skin melanoma

Data Analysis Plan

To analyze the data using logistic regression, several variables were recoded to indicate a yes or no response. A response of “yes” was recoded to a 2, and a response of “no” or anything other than “yes” was recoded to a 0. The “yes” responses could not be coded to a 1, the customary coding for a “yes” response, due to this having a different value in the original dataset.

Descriptive statistics of mean, median, and mode will be calculated for each continuous variable, and visualizations such as histograms will be generated to provide an initial understanding of the data distribution and relationships between variables. Frequencies and percentage distributions will be calculated for the categorical variables. Bivariate logistic regression analyses will be conducted to determine whether there is an association between the dependent variable of taking or not taking medication and each of the independent variables (insurance status or insurance type). Forward stepwise logistic regression analyses will also be conducted to determine whether there is an association between the dependent variable of taking or not taking medication and each of the independent variables (insurance status or insurance type) controlling for the confounders one at a time to determine the final statistical models. These analyses will produce odds ratios and their 95% confidence intervals, which will provide insights into the direction and magnitude of associations between the likelihood of taking depression medication and each of the two independent variables.

SPSS software version 29.0.1.1 will be used for all of the analyses and all data manipulation and analysis steps will be thoroughly documented to ensure reproducibility.

Statistical significance will be set at $p < .05$. When appropriate, p-values, odds ratios, and confidence intervals (CIs) will be reported.

Threats to Validity

The concept of validity is critical to most research studies. Validity refers to how well something measures what it is supposed to measure and to what degree a concept, conclusion, or result reflects reality (Andrade, 2018). Internal validity refers to how well the various aspects of the study were carried out leading to results that answered the research questions of the study without bias and are considered trustworthy (Andrade, 2018). Low internal validity could occur if there are biases in any phase or phases of the study, including how the study was conducted, how the questions were asked, and whether certain populations were systematically underrepresented. External validity refers to whether the study's results are generalizable to other circumstances and is usually based on the idea of random sampling (Andrade, 2018). If a sample has been truly randomly collected from the population, the sample should be a representative sample of that population.

NHIS uses multistage area probability sampling to ensure that it collects data from a representative sample of households across the U.S. Proper training of interviewers, standardized question wording, and consistent data collection procedures help maintain internal validity (Centers for Disease Control and Prevention, 2020).

The NHIS sample design is carefully structured to be representative of noninstitutionalized civilian U.S. residents, increasing external validity. However, certain populations, such as people in nursing homes, prisons, or long-term care facilities, are

excluded, which limits the generalizability of the data to those groups (Centers for Disease Control and Prevention, 2020).

Ethical Procedures

The NHIS is administered by the National Center for Health Statistics (NCHS) of the CDC, which is legally responsible for holding all patient responses in confidentiality. Therefore, all data were de-identified prior to this researcher gaining access to the dataset, and as a result, there is no risk of provider or patient confidentiality concerns for this dissertation. All researchers who leverage this dataset are notified of the required compliance and data use restrictions on the download page (Blewett et al., 2023). As a result, the data downloaded by this researcher will be used solely for the purpose of this study. There will be no attempt made to identify providers or patients in the dataset and no unnecessary manipulations of the data. Institutional Review Board (IRB) approval will be requested and received before analyzing the dataset.

Summary

This chapter set the foundation and outlined the research methods for a study on differences regarding health insurance status and type among patients with breast, colorectal, melanoma skin, prostate, and/or lung cancer with respect to the likelihood of taking medication for depression. The study aimed to highlight possible disparities in access to care for depression among cancer patients as a result of insurance status and/or type of insurance which could potentially lead to negative outcomes like higher healthcare costs, lower quality of life, and increased mortality for cancer patients who do not address comorbid depression. The study used NHIS data on adults aged 18 and older who reported being told that they had at least one of the five types of cancer listed above

and who reported that they were either taking or not taking medication for depression. A power analysis conducted with G*Power software determined that a minimum sample size of 192 was required to achieve adequate statistical power. Logistic regression was used to determine whether there was an association between the dependent variable of taking or not taking medication and each of the independent variables (insurance status or insurance type). Forward stepwise logistic regression analyses were also conducted to determine whether there was an association between the dependent variable of taking or not taking medication and each of the independent variables (insurance status or insurance type) controlling for the confounders one at a time to determine the final statistical models. These analyses produced odds ratios and their 95% confidence intervals, which provided insights into the direction and magnitude of associations between the likelihood of taking depression medication and each of the two independent variables.

Chapter 4: Results

In this chapter, I will present the findings of the study of potential disparities in cancer patients' access to depression treatment by insurance status resulting from a comprehensive analysis of CDC's National Health Interview Survey data from 2019 to 2022. I will provide a clear and objective presentation of the study's findings, directly addressing the research questions and hypotheses outlined in Chapter 1.

Research Questions and Hypotheses

Research Question 1 (RQ1): Is there a difference in the likelihood of taking medication for depression (yes or no) based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients?

Null hypothesis (H_01): There is no difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Alternative hypothesis (H_a1): There is a difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Research Question 2 (RQ2): Is there a difference in the likelihood of taking medication for depression (yes or no) based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race?

Null hypothesis (H_02): There is no difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health

insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race.

Alternative hypothesis (H_{a2}): There is a difference in the likelihood of taking medication for depression based on health insurance status (having vs. not having health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race.

Research Question 3 (RQ3): Is there is a difference in the likelihood of taking medication for depression (yes or no) based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients?

Null hypothesis (H_{03}): There is no difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Alternative hypothesis (H_{a3}): There is a difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients.

Research Question 4 (RQ4): Is there is a difference in the likelihood of taking medication for depression (yes or no) based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients while controlling for sex, age, and race?

Null hypothesis (H_{04}): There is no difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health

insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients, while controlling for sex, age, and race.

Alternative hypothesis (H_{a4}): There is a difference in the likelihood of taking medication for depression based on type of health insurance (public vs. private health insurance) among breast, colorectal, skin, prostate, and/or lung cancer patients, while controlling for sex, age, and race.

In Chapter 3, I discussed the methodological plan for this research. However, some deviations from that original plan were necessary to conduct the study. First, the insurance variable was recoded to combine Medicaid and Medicare into one public insurer variable and therefore able to be compared to private insurance (“Payer”). Second, a filter was used to only include adult respondents who had a cancer diagnosis, thereby making the analysis more streamlined.

In separate sections of this chapter, I address each of these research questions and test the associated hypotheses. The chapter begins with a presentation of the descriptive statistics to provide an overview of the NHIS sample and key variables. This is followed by the results of the inferential statistical analyses, which directly addressed the research questions and tested the four hypotheses. Tables, figures, and narrative explanations are used to present the findings in a clear and accessible manner. In this chapter, I provide a comprehensive yet focused presentation of the findings, laying the groundwork for the discussion and conclusions that will follow in Chapter 5.

Results

Demographic Characteristics

The 2019–2022 NHIS datasets included 151,406 total respondents of all ages with and without cancer. Among them, females reported notably higher percentages of depression medication use (18.5%) than males (9.6%). A total of 7,064 of those respondents were 18 years of age and above and were diagnosed with breast, prostate, lung, colorectal, and/or melanoma skin cancers and met the other study inclusion criteria, and they were included in the study sample. Depression was reported by 14.7% of the study sample. The age of the study sample ranged from 23 to 85 with an average age of 70.8 years. As seen in Table 2 below, nearly three-quarters of the study sample was aged 65 and over.

Table 2

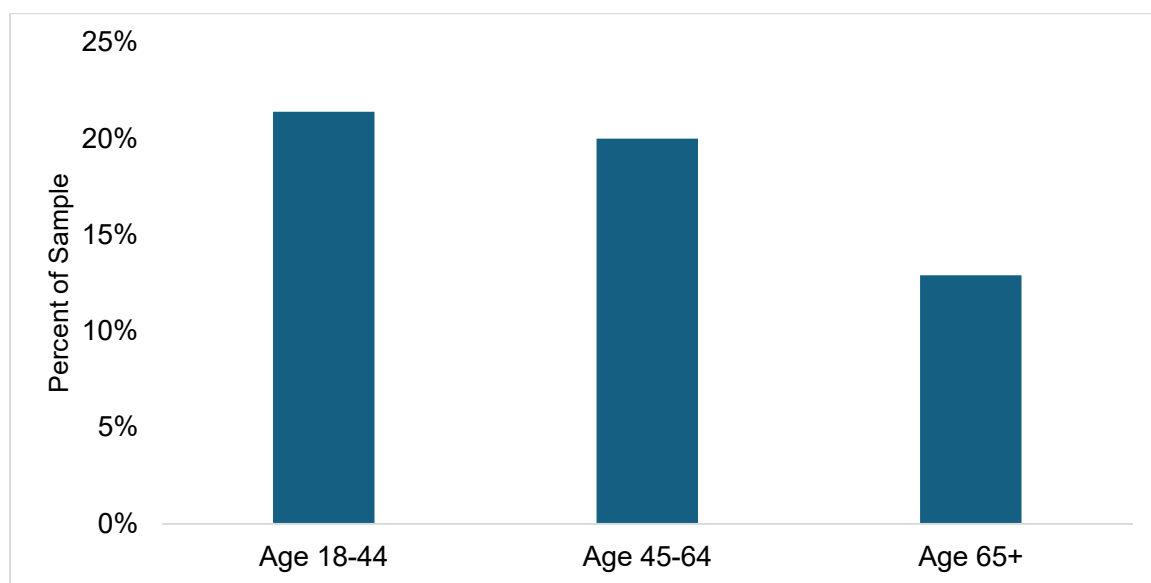
Frequencies and Percentages of Study Sample by Age Group

	N	%
Age 18-44	184	2.6%
Age 45-64	1,633	23.1%
Age 65+	5,247	74.3%
Total	7,064	100%

Figure 2 below shows the distribution of the study sample who took medication for depression by age group, with the 18–44-year-olds being the most likely to take medication followed closely by the 45–64-year-olds.

Figure 2

Percentages of Study Sample Who Took Medication for Depression by Age Group



As seen in Table 3 below, there was a slightly higher percentage of females than males in the study sample.

Table 3

Frequencies and Percentages of Study Sample by Gender

	N	%
Female	4,090	57.9%
Male	2,974	42.1%

As seen in Table 4 below, the study sample was predominantly White (86.1%).

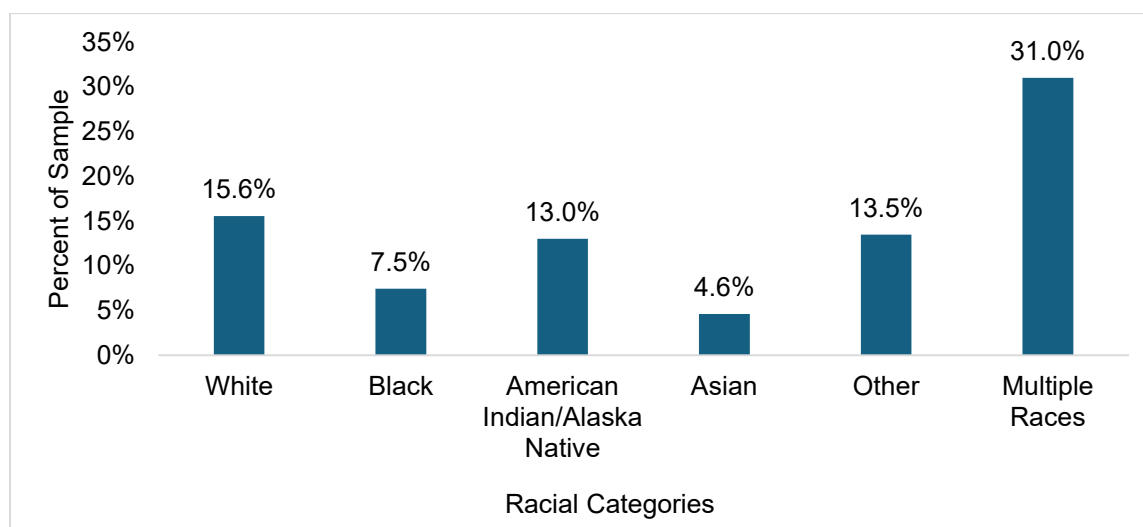
Table 4*Frequencies and Percentages of Study Sample by Race*

	N	%
White	6,082	86.1%
Black/African American	590	8.4%
American Indian/Alaska Native	47	0.7%
Asian	132	1.9%
Other	38	0.5%
Multiple Race	60	0.8%
Missing	115	1.6%

As seen in Figure 3 below, those identifying themselves as multi-racial in the study sample were about twice as likely as Whites (who were the next most likely) to report taking medication for depression.

Figure 3

Percentages of Study Sample that Took Medication for Depression by Race



As seen in Table 5 below, breast cancer was by far the most common cancer in the study sample with 2,823 cases (39%). Since some members of the study sample had more than one type of cancer, the total number of cancer cases exceeded the study sample size of 7,064.

Table 5

Frequencies and Percentages of Cancer Diagnoses by Cancer Type

	N	%
Breast	2,823	39%
Colorectal	827	11%
Lung	467	6%
Prostate	1,841	25%
Melanoma Skin	1,329	18%

Of the study sample, 15.2% took depression medication, with the highest percentage in those with lung cancer (19.3%), as seen in Figure 4 below.

Figure 4

Percentages of Study Sample that Took Medication for Depression by Cancer Type

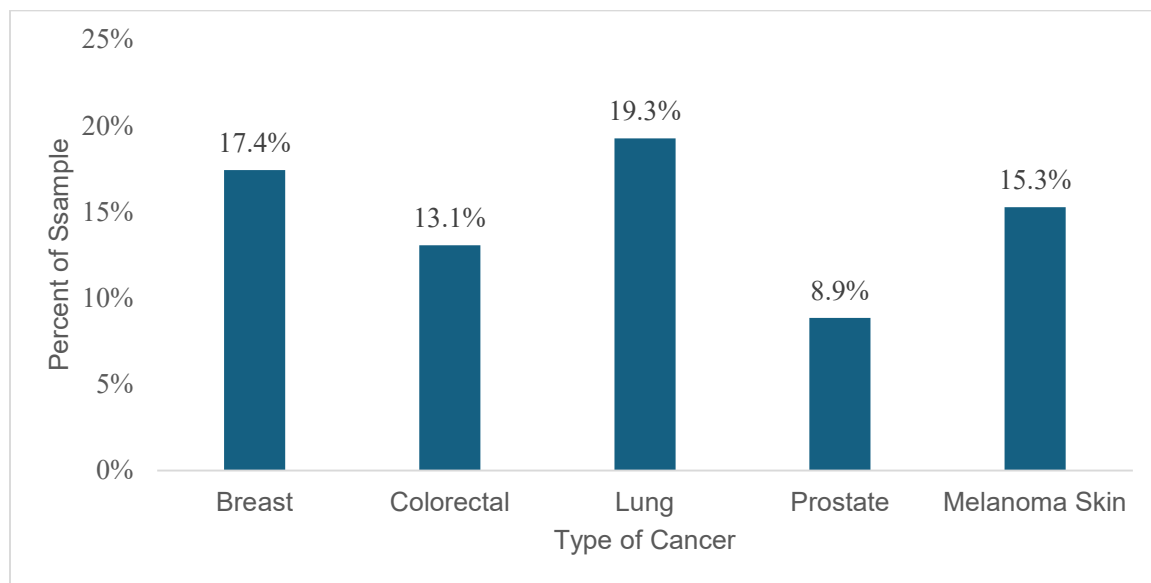
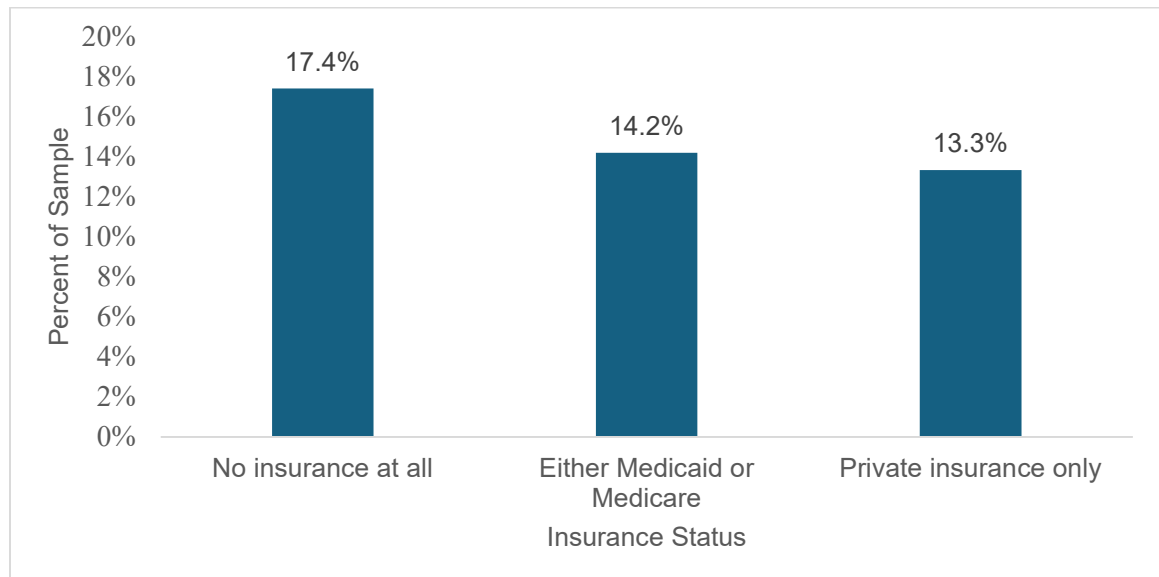


Table 6 below shows the frequencies and percentages of the study sample by health insurance status. Nearly half (48.1%) had public insurance (Medicaid or Medicare), more than double the percentage of those with private insurance, while 5.4% had no insurance. As seen in Figure 5 below, 17.4% of those uninsured took medication for depression, followed by those with public insurance and those with private insurance.

Table 6*Frequencies and Percentages of Study Sample by Insurance Status*

	N	%
No insurance at all	381	5.4%
Either Medicaid or Medicare	3,393	48.1%
Both Medicaid and Medicare	315	4.5%
Private insurance only	1,498	21.2%
Private and either public insurance	1,452	20.6%
Private and both public insurances	16	0.2%
Missing	9	0.1%

Figure 5*Percentages of Study Sample that Took Medication for Depression by Insurance Status*

Research Question 1

In the first research question, I explored whether there was a difference in the likelihood of taking medication for depression between those having and not having health insurance among breast, colorectal, skin, prostate, and/or lung cancer patients. As seen in Table 6 above, 6,674 patients in the study sample had insurance coverage, compared to 381 who did not, and nine who did not respond. As seen in Table 7 below, the bivariate logistic regression yielded an odds ratio of 1.403, suggesting that there was increased likelihood of taking depression medication in those with insurance coverage. However, this finding was not statistically significant, as indicated by the p-value of 0.315 and the 95% confidence interval of 95% CI [0.725, 2.716]. Based on these findings, the researcher did not reject the null hypothesis.

Table 7

Bivariate Logistic Regression Showing Whether Insurance Coverage was a Predictor of Taking Medication for Depression

	B	S.E.	Wald	df	Sig.	Odds Ratio	95% C.I. for EXP(B)	
							Lower	Upper
Insurance Coverage	0.339	0.337	1.011	1	0.315	1.403	0.725	2.716
Constant	-2.092	0.335	38.950	1	0.000	0.123		

a. Variable(s) entered on step 1: Insurance Coverage.

Research Question 2

I used the second research question to explore whether there was a difference in the likelihood of taking medication for depression between those having and not having health insurance among breast, colorectal, skin, prostate, and/or lung cancer patients,

while controlling for gender, age, and race. As seen in Table 8 below, the multivariate logistic regression yielded an odds ratio of 2.128 (compared to 1.403 in the unadjusted analysis), suggesting that there was increased likelihood of taking depression medication in those with insurance coverage compared to those without it, with the increased likelihood being higher than in the unadjusted analysis, suggesting that there was confounding in the unadjusted analysis. This finding was statistically significant as indicated by the p-value of <0.001 (compared to 0.315 in the unadjusted analysis) and the 95% confidence interval of 95% CI [1.934, 2.343].

The analysis revealed several other statistically significant relationships between the variables that were controlled for (gender, race, and age) and the likelihood of taking medication for depression. The odds ratio for gender (males vs. females) was 0.45, indicating that the odds of taking medication for depression were less than half as high among males compared to females (e.g. females were more than twice as likely as men to take medication for depression). This result was statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval [0.443, 0.468].

Race was also shown to be statistically significantly associated with the likelihood of taking medicine for depression. The odds ratio comparing the Black/African American to White (reference category) respondents was 0.542, indicating that the odds of taking medication for depression were a little more than half as high among Black/African Americans compared to Whites (e.g. Whites were nearly twice as likely to take medication for depression as Black/African Americans). The odds ratio comparing Asian to White respondents was 0.215, indicating that the odds of taking medication for depression were less than a quarter as high in Asians compared to Whites (e.g. Whites

were more than four times as likely to take medication for depression than Asians). The odds ratio comparing Other races to Whites was 0.643, indicating that the odds of taking medication for depression were less than 65% as high in Other races compared to Whites and the odds ratio comparing multi-racial to White respondents was 1.387, indicating that the odds of taking medication for depression were nearly 40% higher in multi-racial respondents compared to Whites. These results were all statistically significant. On the other hand, there were no statistically significant difference in the likelihoods of taking medication for depression between American Indian/Alaskan Native and white respondents.

Age was not shown to be statistically significantly associated with the likelihood of taking medicine for depression. The odds ratio for age was 1 with a p-value of 0.355.

Based on an odds ratio of 2.128 and a p-value of <0.001 in this multivariate analysis, the researcher rejected the null hypothesis and concluded that breast, colorectal, skin, prostate, and/or lung cancer patients having health insurance had a higher likelihood of taking medication for depression than those not having health insurance, while controlling for gender, age, and race.

Table 8

Multivariate Logistic Regression Showing Whether Insurance Coverage was a Predictor of Taking Medication for Depression, controlling for Gender, Race, and Age

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Insurance Coverage	0.755	0.049	237.475	1	<0.001	2.128	1.934	2.343
Gender	0.798	0.02	1562.226	1	<0.001	0.45	0.433	0.468
Race			802.221	5	<0.001			
Black / African American	-							
American Indian / Alaskan Native	0.612	0.035	314.333	1	<0.001	0.542	0.507	0.58
Asian	-							
Other Multiple Races	0.441	0.092	22.908	1	<0.001	0.643	0.537	0.771
Age	0.327	0.085	14.816	1	<0.001	1.387	1.174	1.638
Constant	0	0.001	0.857	1	0.355	1	0.999	1.001
	-							
Constant	2.273	0.053	1821.341	1	<0.001	0.103		

a. Variable(s) entered on step 1: Insurance Coverage Status, Gender, Race, Age.

Research Question 3

The third research question explored whether there was a difference in the likelihood of taking medication for depression between those having public insurance (Medicare and/or Medicaid) and private insurance among breast, colorectal, skin, prostate, and/or lung cancer patients having health insurance. A total of 3,708 patients had public insurance (3,393 had either Medicare or Medicaid and 315 had both Medicare and Medicaid) compared to 1,489 patients who had private insurance. As seen in Table 9 below, the logistic regression yielded an odds ratio of 1.182, suggesting that there was a

small increased likelihood of taking depression medication among those with public insurance. This finding was found to be of borderline statistical significance, as indicated by the p-value of 0.061 and the 95% confidence interval of [0.992,1.408]. Based on the combination of a relatively modest odds ratio of 1.182 which suggested a relatively low level of clinical significance, and the p-value being above 0.05, the researcher did not reject the null hypothesis.

Table 9

Bivariate Logistic Regression Showing Whether Type of Insurance was a Predictor of Taking Medication for Depression

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Payer (1)	0.167	0.089	3.511	1	0.061	1.182	0.992	1.408
Constant	-1.871	0.077	597.9	1	<0.001	0.154		

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

b. The variable of Payer indicates the type of insurance or “payer” of healthcare services (public vs. private).

Research Question 4

The fourth research question explored whether there was a difference in the likelihood of taking medication for depression between those having public and private insurance among breast, colorectal, skin, prostate, and/or lung cancer patients having health insurance, while controlling for gender, age, and race. As seen in Table 10 below, the multivariate logistic regression yielded an odds ratio of 2.168 (compared to 1.182 in the unadjusted analysis), suggesting that those with public insurance were more than twice as likely to take depression medication as those with private insurance, with the increased likelihood being much higher than in the unadjusted analysis, suggesting that

there was confounding in the unadjusted analysis. This finding was statistically significant, as indicated by the p-value of <0.001 (compared to a non-significant value of 0.061 in the unadjusted analysis).

The analysis revealed several statistically significant relationships between the variables that were controlled for (gender, race, and age) and the likelihood of taking medication for depression. The odds ratio for gender (males vs. females) was 0.447, indicating that the odds of taking medication for depression were less than half as high among males compared to females (e.g. females were more than twice as likely as men to take medication for depression). This result was statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval [0.427, 0.467].

Race was also shown to be statistically significantly associated with the likelihood of taking medicine for depression. The odds ratio comparing Black/African American to White (reference category) respondents was 0.465, indicating that the odds of taking medication for depression were less than half as high among Black/African Americans as Whites (e.g. Whites were more than twice as likely to take medication for depression than Black/African Americans). This result was statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval [0.431, 0.502]. The odds ratio comparing American Indian / Alaskan Natives to White respondents was 0.711, indicating that the odds of taking medication for depression for American Indian / Alaskan Natives were less than three quarters as high as for Whites (e.g. Whites were nearly 30% more likely to take medication for depression than American Indian / Alaskan Natives). This result was statistically significant as indicated by the p-value of 0.004 and the 95% confidence interval [0.563, 0.898]. The odds ratio comparing Asian

respondents to White respondents was 0.21, indicating that the odds of taking medication for depression for Asians were about one fifth as high as for Whites (e.g. Whites were nearly five times as likely to take medication for depression as Asians). This result was statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval [0.181, 0.244]. The odds ratio comparing other race respondents to white respondents was 0.643, indicating that the odds of taking medication for depression for respondents of other races were 0.643 as high compared to Whites (e.g. Whites were nearly 40% more likely to take medication for depression than respondents of other races. This result was statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval [0.527, 0.785]. The odds ratio comparing multiple race respondents to white respondents was 1.18, indicating that the odds of taking medication for depression for respondents of other races were 18% higher than in Whites. This result was not statistically significant as indicated by the p-value of 0.093 and the 95% confidence interval [0.973, 1.431].

Table 10

Multivariate Logistic Regression Showing Whether Type of Insurance was a Predictor of Taking Medication for Depression, controlling for Gender, Race, and Age

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Payer	0.774	0.025	937.254	1	<0.001	2.168	2.063	2.278
Gender	-	0.023	1259.122	1	<0.001	0.447	0.427	0.467
Race	-		783.723	5	<0.001			
Black / African American	-	0.039	382.891	1	<0.001	0.465	0.431	0.502
American Indian / Alaskan Native	-	0.119	8.206	1	0.004	0.711	0.563	0.898
Asian	-	0.077	412.747	1	<0.001	0.21	0.181	0.244
Other	-	0.102	18.889	1	<0.001	0.643	0.527	0.785
Multiple Races	-	0.098	2.818	1	0.093	1.18	0.973	1.431
Age	-	0.001	247.998	1	<0.001	0.989	0.988	0.991
Constant	-	0.035	1423.21	1	<0.001	0.272		

a. Variable(s) entered on step 1: Payer, Gender, Race, Age.

b. The variable of Payer indicates the type of insurance or “payer” of healthcare services (public vs. private).

Age was also shown to be statistically significantly associated with the likelihood of taking medication for depression. The odds ratio for age was 0.989, suggesting that with each one-year increase of age, the likelihood of taking medication for depression decreased ever so slightly.

The null hypothesis was rejected since the result was highly statistically significant as indicated by the p-value of <0.001 and the 95% confidence interval of 95% CI [2.063, 2.278], indicating there was a difference in the likelihood of taking medication for depression between those having public and private insurance among breast,

colorectal, skin, prostate, and/or lung cancer patients having health insurance, while controlling for gender, age, and race.

Summary of Key Findings

A study sample comprised of 7,064 adult cancer (breast, prostate, lung, colorectal, and melanoma skin cancer) patients from the 2019-2022 NHIS dataset was utilized to evaluate the potential effect of insurance coverage (yes vs. no) on the likelihood of taking medication for depression, first not controlling for any variables and then controlling for patient gender, race, and age. The initial bivariate analysis revealed an increased likelihood of depression medication use among insured respondents (OR = 1.403), though this finding was not statistically significant ($p = 0.315$). The researcher therefore did not reject the null hypothesis. The subsequent multivariate analysis, controlling for the demographic factors of gender, race and age, showed a stronger association (OR = 2.128), and this result was highly statistically significant ($p < 0.001$). The researcher therefore rejected the null hypothesis and concluded that breast, colorectal, skin, prostate, and/or lung cancer patients having health insurance had a higher likelihood of taking medication for depression than those not having health insurance, while controlling for gender, age, and race.

The members of that same study sample who had health insurance coverage was utilized to evaluate the potential effect of type of insurance coverage (public vs. private) on the likelihood of taking medication for depression, first not controlling for any variables and then controlling for patient gender, race, and age. In the bivariate analysis, those with public insurance, which included Medicare and/or Medicaid, showed a slightly increased likelihood of taking depression medication compared to those with private

insurance (OR = 1.182), and the p-value of 0.061 fell slightly above the traditional 0.05 threshold for statistical significance. The researcher therefore did not reject the null hypothesis. The subsequent multivariate analysis, controlling for the demographic factors of gender, race and age, showed a much stronger association (OR = 2.168), and this result was highly statistically significant ($p < 0.001$). The researcher therefore rejected the null hypothesis and concluded that breast, colorectal, skin, prostate, and/or lung cancer patients having public health insurance had a higher likelihood of taking medication for depression than those having public health insurance.

In the next chapter, we will discuss these findings in the context of existing literature and their limitations as well as implications for public health practice and policy. Chapter 5 will also discuss the social significance of this research and suggestions for future research.

Chapter 5: Discussion

Introduction

Cancer remains the second leading cause of death in the United States, accounting for approximately 611,720 deaths annually, despite a decline in overall cancer mortality rates from 2015 to 2019 (National Cancer Institute, 2024). A cancer diagnosis often leads to significant financial distress, particularly for those without adequate healthcare coverage. The burden of out-of-pocket medical costs can impact patients' quality of life, and adherence to treatment and financial stress, exacerbated by challenges in maintaining employment during treatment, is a major concern for cancer patients, especially those who are underinsured (National Cancer Institute, 2024). Moreover, financial issues can compound the psychological toll of cancer, triggering or worsening mental health conditions like depression and anxiety. These conditions are common among cancer patients and can lead to further challenges in managing their care, with potential impacts on survival and quality of life (Brandão et al., 2018; Gu et al., 2020).

Mental health issues are prevalent in cancer patients, with studies suggesting that about one-third of cancer patients suffer from conditions such as depression. The incidence and prevalence of psychiatric conditions tend to be higher in patients with advanced cancer or those receiving palliative care (Caruso & Breitbart, 2020). In addition, a lack of mental health support in oncology care is a significant issue, as many oncologists do not routinely address these conditions due to time constraints, lack of training, or stigma surrounding mental health (Granek et al., 2019). Beyond the patient, the broader healthcare system is affected by the intersection of cancer and mental health. The presence of mental health conditions often leads to longer hospital

stays, higher readmission rates, and increased healthcare costs, which can strain an already overburdened system (Beeler et al., 2020). Addressing these challenges through improved screening, support for mental health conditions, and better integration of care could potentially not only improve outcomes for cancer patients but could potentially also help alleviate pressures on the U.S. healthcare system (Shmerling, 2021). In this study, I explored whether, and if so how, health insurance may impact the management of comorbid depression in cancer patients, contributing to a better understanding of this complex issue.

Interpretation of the Findings

In this study, I examined potential disparities in the likelihood of taking medication for depression among cancer patients based on insurance status and type of insurance. The research was conducted using NHIS data, including 151,406 total respondents of which 7,064 were 18 years of age and over who were diagnosed with breast, prostate, lung, colorectal, or melanoma skin cancer. The study provided important insights into depression medication use patterns among cancer patients, as it revealed significant disparities across demographic groups.

Insurance Status

Contrary to initial expectations, the uncontrolled analysis of insurance status revealed no statistically significant difference in the likelihood of depression medication use between insured and uninsured respondents. The odds ratio of 1.403 suggested a slight increase in likelihood of taking depression medication in those with insurance coverage, but this result was not statistically significant ($p = 0.315$). This finding implied that having insurance alone does not guarantee depression medication access or

utilization among cancer patients. However, after controlling for gender, race, and age of the respondents, those having health insurance were found to be more than twice as likely to take medication for depression as those without health insurance coverage. The odds ratio of 2.128 indicated high clinical significance, and the $p < 0.001$ indicated high statistical significance, and demonstrated that the control variables of gender and race, which emerged as predictors of the likelihood of taking medication for depression in their own right, confounded the relationship between insurance status and likelihood of taking medication for depression, biasing the results towards the null.

Insurance Type

The results of the uncontrolled analysis of insurance type suggested that the type of insurance had perhaps a small effect on the likelihood of cancer patients taking medication for depression. The odds ratio of 1.182 suggested a slight increase in likelihood of taking depression medication in those with public insurance, but this result was only of borderline statistical significance ($p = 0.315$). However, after controlling for gender, race, and age of the respondents, those having public health insurance were found to be more than twice as likely to take medication for depression as those with private health insurance. The odds ratio of 2.168 indicated high clinical significance, and the $p < 0.001$ indicated high statistical significance, and demonstrated that the control variables of gender and race, which emerged as predictors of the likelihood of taking medication for depression in their own right, confounded the relationship between type of insurance and likelihood of taking medication for depression, biasing the results towards the null.

Gender

One of the most notable but not surprising findings was that female cancer patients were significantly more likely than their male counterparts to take medication for depression in both analyses for insurance coverage and type of insurance. This gender gap raises several important considerations for clinical practice. First, it may reflect underdiagnosis or undertreatment of depression in male cancer patients, possibly due to societal stigma or reluctance to seek mental health treatment in men. Second, there is the possibility that females are, in general, more likely to proactively seek treatment for mental health concerns than males as noted in research (National Institute of Mental Health, 2024). These suggest that healthcare providers should consider implementing targeted screening and intervention strategies for male cancer patients, recognizing that they may be less likely to voluntarily report depressive symptoms.

Race

The study found significantly lower likelihoods of depression medication use among Black/African American, American Indian/Alaskan Native, Asian, and Other race respondents compared to White respondents, which could indicate that there are differences by race with respect to systemic barriers to mental health care access, such as a lack of racially/ethnically diverse mental health providers, language barriers, a failure to acknowledge cultural beliefs, or even mental health providers being more concentrated in predominantly White areas. Different racial groups may also vary in their acceptance of mental health treatment. The finding of increased likelihood of taking medication for depression among multiracial respondents could suggest unique psychological challenges or different patterns of healthcare utilization in this population. The findings from this

analysis on racial differences suggest the need for equality focused and culturally competent care for mental health conditions by oncologists. Targeted interventions to address disparities in mental health treatment access and utilization are warranted.

Age

The findings related to age were also noteworthy in that there were no statistically significant differences in likelihood of taking medication for depression in the insurance status ($p = 0.355$) analysis, but there were statistically significant differences in likelihood of taking medication for depression in the insurance type analysis, with younger patients showing increased likelihood of medication use. This finding could reflect several underlying factors. Younger patients have been shown to have higher rates of mental health problems in the last decade than older patients (Lee et al., 2023) and younger patients who experience a cancer diagnosis at a young age may have greater psychological distress due to a cancer diagnosis disrupting their life trajectory (Hughes et al., 2024). Young adults are also likely to face different social and economic pressures than older adults (Sechopoulos, 2022). However, the increased likelihood of medication use for depression may simply be a reflection of more willingness among younger adults to accept mental health treatment.

Implications

These findings of this research highlight critical disparities in the likelihood of taking medication for depression among cancer patients. The disparities across insurance status as well as insurance type, ages, genders, and races suggest potential barriers to depression treatment including stigma, lack of awareness, and cultural or generational differences. The research outcomes of this study demonstrate differences that show the

need for interventions such as providing targeted and culturally sensitive mental health support and care to cancer patients.

The results of the current study may have social impact by positively influencing clinical care in healthcare practices, including oncology offices. This research could encourage the use of more inclusive and equitable mental health treatment approaches and the reduction of stigma around mental health treatment, particularly among underserved racial populations such as Blacks, American Indians and Alaskan Natives (Yearby et al., 2022) in healthcare practices.

Practitioners can potentially address gender disparities by dealing with ongoing stigma that may prevent men from seeking mental health treatment. Encouraging men to talk about their mental health struggles in light of their cancer diagnoses and seek treatment for their mental ailments should be part of targeted interventions, such as social messaging, to normalize mental health treatment for male cancer patients. The finding of increased likelihood of taking medication for depression among 18–44-year-olds in the current study suggests generational differences in access to mental health treatment. While this finding may reflect changing social attitudes toward mental health across generations, it also speaks to the need for specialized support for older cancer patients who might be less likely to seek mental health treatment.

Limitations and Recommendations for Future Research

There are several potential limitations of the current study. The study sample was predominantly White and older and was limited to patients diagnosed with a relatively few types of cancer, which will limit the generalizability of the study. Future research should utilize more diverse populations diagnosed with a wider variety of cancers. Also,

the current study relied on self-reported data. Self-reported data are subject to recall error, social desirability biases, and memory errors (Geisen et al., n.d.).

Another potential limitation of the current study was my use of the likelihood of taking medication for depression as a proxy for access to mental health care, thereby excluding other forms of mental health interventions such as psychotherapy, other types of mental health conditions, and other components of access to care. In addition, the likelihood of taking medication is not only a function of access to care but also a function of willingness to take medication that is prescribed. Future researchers should take these issues into account in determining what outcome variables to use.

Another potential limitation of the current study was its cross-sectional design, as I was not able to determine causality. Future longitudinal studies should be considered to make causal inferences a possibility. In addition, the use of longitudinal studies could make it possible to understand how depression treatment affects the course of cancer care over time. During cancer treatments, patients are taken off of all unnecessary medications outside of targeted cancer therapies in order to eliminate any potential side effects from these other medications. A recommendation resulting from this study is to develop a randomized clinical trial among cancer patients taking depression medications versus those who are not taking depression medication to examine survival rate. A study examining survival rate could inform researchers and oncologists if medications taken for depression alongside targeted cancer therapies have any negative interactions with cancer medications and could perhaps make it possible to understand if and if so, how depression medications mediate or moderate targeted cancer therapies.

Another potential limitation of the current study was the limited array of available variables studied. Future studies might benefit from including additional variables such as cancer stage, time since diagnosis, and concurrent treatments, which could explain some of the observed patterns such as higher medication use among breast cancer patients. Differences among cancer stages and time since diagnosis may have an impact on the emotional state of patients and therefore could impact their need for depression medication. Concurrent treatments are worth exploring in that there may be limitations in the types of medications that can be prescribed concurrently, thereby limiting the opportunity to take the medication needed to treat depression. Future researchers should also examine specific aspects of insurance coverage that might influence mental health care treatment access and utilization, such as copayments, provider networks, and prior authorization requirements.

Conclusion

In this study, I investigated the impacts of insurance status and types of insurance on the likelihood of taking medication for depression in adult cancer patients. While insurance coverage status, when analyzed by itself, did not significantly predict the likelihood of taking medication for depression, when the analysis controlled for gender, race, and age, not only did the result become statistically significant, but the odds ratio increased by approximately one-third from 1.403 to 2.128, indicating a dramatic increase in clinical significance. While insurance type had only a limited clinical significance and borderline statistical significance when analyzed by itself, when the analysis controlled for gender, race, and age, not only did the result become statistically significant, but the odds ratio increased almost double from 1.182 to 2.168, indicating a dramatic increase in

clinical significance. These findings, which demonstrate that confounding was very prevalent and needed to be controlled for, underscore the need for targeted interventions, culturally competent care, and enhanced screening protocols to ensure equitable access to mental health care and treatment for all cancer patients. Future research should explore cancer stage, time since diagnosis, and concurrent treatments as discussed above and investigate the underlying processes driving such disparities to help researchers and practitioners develop more effective and inclusive mental health support strategies within cancer care.

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