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The Impact of Depression Screening on Mental Health Referrals for Pain Patients.

Pamela Lynn Irrgang Metz
Walden University

Walden University

College of Allied Health

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Pamela Lynn Irrgang-Metz

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Review Committee
Dr. Benita Stiles-Smith, Committee Chairperson, Psychology Faculty
Dr. Denise Horton, Committee Member, Psychology Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2024

Abstract

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MA, Walden University, 2021

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Clinical Psychology

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Abstract

More than half of all Americans suffer from chronic pain. Of this staggering amount, more than half also suffer from depression. Individuals afflicted with chronic pain and/or depression are at risk for opioid abuse, opioid overdose, and suicide, but when considered as comorbidities, the risk increases. Although some pain clinics screen for depression and provide referrals for mental health services based on screening, many do not. Chronic pain patients are often treated using a biopsychosocial approach via a multidisciplinary model, but existential crises are often not considered within the therapeutic relationship. Consequently, these theoretical frameworks were the foundation from which to explore 150 or more de-identified medical records of chronic pain patients in pain clinics in the Midwest using a quantitative, cross-sectional, non-experimental design. While current research has addressed the relationship between chronic pain and depression, the literature lacks knowledge about the impact of screening patients, those treated with or without opioids for depression with the Patient Health Questionnaire-9 (PHQ-9), and the number of mental health referrals that are generated based on these scores. The results revealed that most patients were screened using the PHQ-9, slightly over half (50.8%) of the patients were treated with opioids. No relationship was found between PHQ-9 scores and the opioid compared to non-opioid treatment type. Results call attention to the need to screen for depression and appropriate mental health referrals to reduce, opioid abuse, overdose, and suicide.

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Dedication

     This dissertation is dedicated to my husband, Thomas Metz who has suffered greatly from chronic pain that began as a result of a random act of violence. This act altered his once safe life into a one of fear, pain, and PTSD. The pain grew even more severe and chronic on July, 10, 2005 when his boat collided with another on Lake Minnetonka. His injuries were extensive and life-threatening, yet despite all odds, he has prevailed. Today he endures severe pain every day with little reprieve; it is because of him, that I was inspired to complete a dissertation about chronic pain. My husband in my eyes, is ever strong and steadfast.

     My dear husband, I know how severe your pain is, how hard you struggle every day with pain and fear, and still, you rarely complain. I can only hope that you know I support you for always, just as you have supported me through my journey. Please know that it is you who inspired me to return to school so that I could help others who are victims of gun violence. I am further inspired by you to make a difference in the lives of those who suffer from the mental, social, and physical constructs of chronic pain so to decrease the stigma of chronic pain, the stigma of opioid use, and the stigma of mental illness. You are my hero; you ground me and guide me through my struggles. I am a better person, writer, and someday soon, a more compassionate doctor because of you and for that I am ever grateful.

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I would also like to thank the members of my dissertation committee, Dr. Benita Stiles-Smith and Dr. Denise Horton. Without your knowledge and dedication, I would not have completed this project. Thank you for being there for me when I was lacking confidence and when I needed guidance with methodology. At times I wanted to give up, not believing I would succeed at my goals, your emails, video chats, and phone calls, lifted me and encouraged me to go on. Imposter syndrome is real and because of you, I am many steps closer to being a doctor. Thank you, thank you, so very much.

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Chapter 1: Introduction to the Study

Chapter 1 begins with an overview of past research in relation to the current study and gives a summary of the need for advanced research in the area of chronic pain, depression, and mental health referrals. The problem statement outlines the problem, that depression screening in patients with chronic pain who receive care in a pain clinic, and the number of mental health referrals that result from scores from screening, are lacking. A purpose statement and research questions describe the relevance of this study to the pain community, including patients, those who are treated with opioid pain medications and those who are not treated with opioids, providers, and researchers. Theories and concepts used to frame the potential study, the nature of the study, and the main definitions used are presented. The assumptions of the study, the limitations, and scope and delimitations, that present from this research are also incorporated in Chapter 1. In the next sections of this chapter, the significance of this work, the impact on social change, and a summary of the study are provided.

Background

Research shows a clear association between chronic pain and depression, with an increase in the incidence and severity of depression in patients with chronic pain who are treated with opioid pain medications (Kosson et al., 2018). Many patients who experience chronic pain are treated in settings with specialists who utilize multidisciplinary approaches that includes medical, physical, and psychological services. There is a need to understand better how chronic pain clinicians assess, quantify, and refer patients who are depressed for mental health services. A call for advanced research is supported by the

growing opioid epidemic and increased rates of suicide in chronic pain patients treated with opioid medications. This study aimed to track the chronic pain patients treated with and without opioids, who were assessed with the PHQ-9 and scoring within the moderate to severe range, and the number of referrals for mental health services that chronic pain providers provided.

Over the past several decades, it is estimated that chronic pain has affected 100 million Americans, or 20.5% of the United States' population. Of these individuals, 40-60% also experience depression (Goldenberg, 2020). As noted, a growing body of research finds an association between chronic pain, depression, and the risk of suicide in patients (Goldenberg, 2020). According to an analysis taken from the National Violent Death Reporting System, the association of depression and chronic pain increases the risk of suicide by approximately 51.7% (Petrosky et al., 2018). Additionally, the rate of suicides further increases when individuals with chronic pain are treated with opioid pain medications (Petrosky et al., 2018). Taken altogether, chronic pain, depression, and opioid use, significantly increase the risk of suicide (Ashrafioun, 2017). Despite these high rates and the amount of research completed on the matter, the recommendations, and guidelines for chronic pain clinicians to assess and refer patients with depression for mental health therapies are unclear.

Numerous studies concentrate on chronic pain, depression, and opioid use relative to the opioid epidemic. For example, Arango-Dávila and Rincón-Hoyos (2018) examined the comorbidity of depression, anxiety, and chronic pain. However, the authors did not include the treatment of chronic pain in a dedicated pain clinic, nor did they assess the

interplay of opioid therapy on depression and chronic pain. In another example, Petrosky et al. (2018) presented correlation of chronic pain with suicidality, yet they failed to consider tracking patient assessments for moderate to severe depression and the number of referrals made by chronic pain providers for depression. These studies describe the relationship between chronic pain and mental health comorbidities but do not address the assessment of depression in opioid and non-opioid treated chronic pain patients in a dedicated pain treatment setting. Adding these elements into the research can potentially impact assessment and mental health referral guidelines. It may also build on the knowledge related to the uniqueness of the pain experienced from an individual perspective while creating social change.

Regular and standardized measurement of depression in pain treatment centers can be useful. The Patient Health Questionnaire-9 (PHQ-9) is a nine-question, self-report measure to assess for the presence of depression symptoms based on the criteria from the Diagnostic and Statistical Manual-Fifth Edition. It is a commonly used screening tool in primary care and medical specialties that treat chronic conditions (Sun et al., 2020). The PHQ-9 has high construct and criterion validity and is also known for test-retest reliability (Levis et al., 2019). In a recent meta-analysis, the PHQ-9 showed more diagnostic accuracy than semi-structured interviews to detect major depression (Levis et al., 2019). In pain settings, it can be given to patients prior to an office visit and the results discussed with the provider during the visit. Even with the ease in which the PHQ-9 can be taken and scored and the amount of research that finds a clear association

between chronic pain and depression, the research regarding the prevalence of depression screening and the practice of providing mental health referrals in pain clinics is scarce.

Problem Statement

This research project aimed to evaluate if pain providers at a pain clinic assessed opioid and non-opioid-treated chronic pain patients for depression and, whether they provided referrals for mental health services based on this assessment. Evidence shows this problem as current, relevant, and significant to psychology and the medical community to understand how to improve the lives of chronic pain patients (Bryan et al., 2017; Bérubé et al., 2017). The cause and presence of chronic pain may also be traumatic. Although sources are not able to predict whether or not depression will present, many data indicate that depression will become a component of chronic pain treatment (Rasu & Knell, 2018). Research on chronic pain through the past five years confirms that chronic pain and depression are biologically, socially, and psychologically associated. The strength of this association has been demonstrated via test-retest reliability and outcome validity (Rasu & Knell, 2018).

Added to the problem of chronic pain is the opioid epidemic, where many individuals are dying from opioids because of abuse, misuse, or lack of education on the potential dangers of opioids (Petrosky et al., 2018). According to the National Institute on Drug Abuse, in 2019 50,000 people died from opioid-involved overdoses in the United States (National Institute on Drug Abuse [NIDA], 2021). Respective to chronic pain, it is reported that between eight and 12 percent of chronic pain patients will develop an addiction to opioids (NIDA, 2021). In 2016, federal recommendations and state mandates

were put in place to toughen the guidelines for prescribing opioids, and many Americans living with chronic pain found it even more challenging to obtain pain medications (Centers for Disease Control [CDC], 2018). With the new mandates and guidelines from the CDC, many chronic pain patients who were once prescribed opioids were tapered down from an effective to a less effective dose or were discontinued from opioids altogether. As a result, some chronic pain patients turned to illegal, stronger, and less regulated. types of opioids such as heroin and illegal fentanyl (CDC, 2018). These drugs are often laced with other drugs and chemicals and are more concentrated, making them more deadly than the prescribed medications.

Addiction conditions and opioid-related deaths rose even higher in 2020 with the Covid-19 pandemic that continues as of this writing. As more and more people were left without jobs and stable incomes, they turned to drugs to ease the discomfort of worry, or pain from the virus (Abramson, 2021). For instance, the CDC reported that as early as June 2020, 13% of Americans started or increased the use of substances, and overdoses increased approximately 40% (Czeisler et al., 2020; Ward, 2021). In fact, the Overdose Detection Mapping Application Program (2020) reported an 18% nationwide spike in overdoses during the first part of the epidemic as compared to other months in past years (Alter & Yeager, 2020). In the United States, 40 states found opioid-related mortality on the rise during the pandemic; in other words, people began to use new, unfamiliar drugs due to the inaccessibility of their usual drugs (Alter & Yeager, 2021). These increases are likely directly linked to stay-at-home orders, inaccessibility of healthcare during the

pandemic, and increased anxiety and depression during the early stages of the pandemic (Alter & Yeager, 2021).

Though the new safe-prescribing guidelines for opioids were implemented in 2016, high depression, opioid abuse, and overdose rates continued. These statistics increased even more with the Covid-19 pandemic as more and more people experienced significant stress and financial strain from changes in or loss of employment (Abramson, 2021). These changes caused many people to lose healthcare benefits, and the fear of contracting Covid-19 and stay-at-home orders hindered the ability for patients to see a doctor for medication checks, safe prescribing practices, and obtaining mental health services. (Abramson, 2021). Although telehealth initiatives offered a way for chronic pain patients to meet with their pain specialists during this time, there have been negative impacts on opioid- and non-opioid-treated chronic pain patients in multiple ways. First, assessments previously conducted in the office (i.e., in-person) have become more difficult for patients who do not have access to technology. Second, although many patients are averse to these practices, scheduled and random urine drug screens, pill counts, and physical examinations were no longer as accessible for pain providers to obtain.

Barriers to care, such as those noted, become problematic for chronic pain providers and patients when in-person visits are not feasible and self-report measures like the PHQ-9 are not available with telehealth visits, or the patient or clinic lacks the technology required for telehealth options. Opioids, though not indicated for anti-depressant effects, are well-known for the euphoric response that occurs when the drug

binds to opioid receptors and endorphins are released (Bushey et al., 2021). Given that opioids are so addictive, many studies find a correlation between addiction and the euphoric neurological response. Because of this consistent correlation, it is necessary to note that some people treated with opioids may find brief relief from emotional stressors upon ingestion of these drugs (Yang & Chang, 2019). It is also important to note that when opioid use is decreased, discontinued, or has reached a tolerance point, depressive symptoms may return or increase in severity (Yang & Chang, 2019). Given the strong association between chronic pain and depression, understanding if patients are being assessed for depression and subsequently referred for psychological services is critical for effective physical and mental healthcare for pain patients.

Purpose of the Study

This quantitative study provides information for the pain community regarding the assessment of depression in chronic pain patients and the generation of mental health service referrals. This research identified the degree to which some pain clinics accept and assess the association between depression and chronic pain. The second intention of this study was to explore to what degree PHQ-9 scores and referrals for opioid and non-opioid treated patients to mental health services are related in pain clinics. A third intention was to examine if PHQ-9 scores change in opioid and non-opioid opioid-treated patients following a referral for mental health services. The fourth and final intention sought to determine if there are guidelines that chronic pain treatment centers follow when considering a referral for mental health services for opioid and non-opioid treated patients. These intentions were imperative to this study because the standing research

suggests that while some pain centers use the PHQ-9 to assess depression, not all patients who score in the clinical range for depression are referred for psychological treatment.

Additionally, a goal of this research was to determine at what intervals is depression screening with the PHQ-9 conducted in pain clinics for all chronic pain patients. A second aim was to explore a relationship between patients treated with opioids versus those not treated with opioids in pain clinics. A third goal was to evaluate if a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid patients in a pain clinic exists. Finally, the research study examined if there is a relationship between the PHQ-9 scores of patients treated with and without opioids and if pain providers offered a referral for mental health services. The rationale for choosing this design was to summarize the data, explore relationships, and determine an effect through the independent variables.

Research Questions and Hypotheses

The four research questions and associated hypotheses included in this study are:

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by pain clinics for all chronic pain patients?

$H_0 1$: Pain clinics use the PHQ-9 to assess all patients for depression at every office visit.

$H_A 1$: Pain clinics are not using the PHQ-9 to assess all patients for depression at every office visit.

Research Question 2: What percent of all patients in the participating pain clinics are treated with opioids versus those not treated with opioids?

$H_0$2: More than 50% of all participating pain clinics patients are treated with

opioids.

H_A2: 50% or less of all participating pain clinic patients are treated with opioids.

Research Question 3: Is there a relationship between moderate to severe PHQ-9

scores and patients treated with opioids compared to non-opioid patients in a pain clinic?

$H_0$3: There is a relationship between moderate to severe PHQ-9 scores and

patients treated with opioids compared to non-opioid treated patients in a pain

clinic.

H_A3: There is no relationship between moderate to severe PHQ-9 scores and

patients treated with opioids compared to non-opioid treated patients in a pain

clinic.

Research Question 4: Is there an association between PHQ-9 scores, opioid-

treated compared to non-opioid patients, and the number of mental health referrals

generated?

$H_0$4: There is an association between PHQ-9 scores, opioid-treated compared to

non-opioid patients, and the number of mental health referrals generated?

H_A4: There is no association between PHQ-9 scores, opioid-treated compared to

non-opioid patients, and the number of mental health referrals generated?

Theoretical and Conceptual Framework of the Study

This study examined depression screening and mental health referrals in chronic

pain patients treated with or and without opioids using de-identified data to explore how

chronic pain patients, both those treated with opioids and those not treated with opioids,

are screened for depression using the PHQ-9 tool. It also aimed to explore how many

pain providers refer those patients who scored moderate to severe scores on the PHQ-9

forfor mental health services. A biopsychosocial model applied to this study provides a

theoretical framework for the relationship between PHQ-9 scores and mental health

referrals for this special population and begins to address the existential impact of chronic

pain. Because the biopsychosocial model is used so often in chronic pain management,

incorporating it into this study helped to generalize the outcome of the results.

Additionally, biopsychosocial elements provide a glimpse of the existential concerns that

chronic pain patients face (Dezutter et al., 2016).

The biopsychosocial model was proposed in 1977 by Engel, who realized that the

previous biomedical model required revision (Bowen, 2021). The new model considered

biological, psychological, and social elements that may affect chronic pain patients.

Adding these elements into pain management allowed providers to understand the whole

patient, to understand how pain works comprehensively, and how to assess patients

within context (Bowen, 2021). As the study of pain management evolved, it became

apparent to pain management practitioners that pain was not simply a physical symptom.

Pain, particularly chronic pain, is a multidimensional construct that reciprocally

influences physiological, psychological, and social factors (Bowen, 2017). Since the

biopsychosocial model was introduced, empirical evidence supports using the model

when treating chronic pain.

Existential concerns are not often addressed as part of the biopsychosocial model

and yet many chronic pain patients are faced with existential questions and crises (de

Siqueira, 2018). It is documented across the research literature that chronic pain patients express significant and substantial life changes related to chronic pain and comorbid depression (de Siqueira, 2018; Dysvik & Furnes, 2018). From a biological standpoint, chronic pain patients find substantial changes in their physical abilities to perform the duties they once could. Socially, chronic pain patients often relate a change and lack of, a social life because of pain. Psychologically, patients may have difficulty adjusting to the biological and social changes that present due to pain. Moreover, they may not have adequate coping skills, or they may lack insight into creating a new normal as a result of chronic pain (Rayner et al., 2016).

Due to the many consequences of chronic pain, these patients are at significant risk for depression. Even if depression were diagnosed before the chronic pain manifested, the symptoms of depression would likely affect the pain management process. Regardless of whether chronic pain or depression came first, it is imperative that chronic pain specialists address each of these concerns to build trust and communication with their patients. By the same token, when existential concerns are not addressed, the patient can be left feeling even more isolated. Existential matters are relevant to this research as both historical and modern chronic pain researchers note the impact of pain on quality of life and existential factors (Dysvik & Furnes, 2018; Rayner et al., 2016).

Patients with chronic pain consistently report decreased quality of life and psychological trauma (Dysvik & Furnes, 2018). The general experience of chronic pain calls patients to question their existence, meaning, and purpose in life (Dysvik & Furnes, 2018). They may ask why they have been afflicted with persistent pain or why they

suffered from the event that caused the chronic pain. hronic pain is life-changing; individuals who experience it may be forced to leave a career or face changes in physical abilities (Dysvik & Furnes, 2018). They may lose friends or feel isolated due to a drastic change of economic status or because pain prevents them from participating in social activities. For these reasons and more, pain patients may question philosophical values, self-transcendence, and the meaning of life (de Siqueira, 2018).

Another call for this study was existential concerns commonly noted by patients with chronic pain. Indeed, the terminology used interchangeably by these patients is pain and suffering (Fishman et al., 2010). As detailed in Bonica's (1953) first edition of Managing Pain to Current Times, researchers have noted that the experience of chronic pain can have detrimental effects on intrapersonal and interpersonal functioning, causing the individual who endures the pain to question their existence and purpose in life (Fishman et al., 2010). These patients are known to have difficulties within relationships, which may result in depression and increased pain. At the core of modern existential theory is the emphasis on the human condition as a whole and the belief that individuals are free to find meaning and purpose in their lives as they see fit (Crowell, 2020). Thus, the connection between chronic pain and existential theory is identifying a loss of connection with self and rebuilding a new foundation based on meaning and purpose. Therefore, research exploring how existentialism pertains to chronic pain management is relevant and deserving of additional research (de Siqueira, 2018).

Within the realm of chronic pain, multidisciplinary models for chronic pain management often include medical and psychological domains that work together to

maximize pain therapies and decrease negative psychological impact but fail to address existential concerns (Kroenke, 2021). Similar to the less commonly used, integrated approaches to healthcare, multidisciplinary models offer therapies and treatments to enhance communication between patients and all providers involved (Ehde et al., 2018). A multidisciplinary approach includes pain specialists as the primary point of contact, who can refer to multiple specialists, including physical therapists, behavioral clinicians, interventionists, and other potentially relevant providers (Kroenke, 2021). Evidence from multiple studies and literature reviews finds that the multidisciplinary model effectively promotes open communication between the providers and the patient, but there is a lack of evidence on how the model promotes existential balance. Even so, many pain clinic employees view the model as a way to manage concerns as they arise while considering the cost most effectively. Multidisciplinary pain clinics that include an assessment for depression may heighten the communication and encourage the patient to discuss the impact of chronic pain on mental health and confront existential crises (Ehde et al., 2018).

Despite the considerable research literature examining biopsychosocial pain management models and multidisciplinary approaches, the literature on existential elements related to patients with chronic pain is scarce. Doctors and other providers often operate from a scientific perspective and, at times, may not consider the human component (Dysvik & Furnes, 2018). This claim is reflected in many studies that reflect the biopsychosocial model, the medical model, and the neurobiological model. Quality of life studies in chronic pain management are abundant, yet the information on how

existential concerns affect their patients is underexamined (Dysvik & Furnes, 2018). This study produced a more robust platform of research on how depression and suicide may decrease when the biopsychosocial model addresses existential concerns within the therapeutic relationship between the pain provider and patient.

Nature of the Study

The nature of this study is quantitative, with descriptive statistics and multiple logistic regression as the statistical analysis. The study's key variables include pain clinics, use of PHQ-9, scores from the PHQ-9, opioid-treated patients, non-opioid treated patients, and mental health referrals. The dependent variables are non-opioid and opioid-treated patients and the independent variables, are the use of the PHQ-9, PHQ-9 scores, mental health referrals, and pain clinic. Primary data was sourced from de-identified medical records from a participating pain clinic in the Midwest. Other data was derived from archival data sets from the Mayo Clinic, the National Institute of Health, and the CDC. The data was analyzed with IBM-SPSS and Laird Statistics.

Definitions

The following definitions were used for this study:

Acute Pain: Pain that comes on suddenly with a known or unknown cause. Acute pain is typically relatively severe and lasts less than three months (Institute for Clinical Systems Improvement, 2017).

Analgesics: Medications that are used to deter pain symptoms (Cleveland Clinic, 2017).

Biological Basis of Pain: This term refers to the biological factors involved in the perception of, treatment for, and management of chronic pain (Ward, 2021, November 21).

Biopsychosocial Approach to Pain Management: An approach to pain management that considers biological, psychological, and social dimensions of chronic pain (Ballantyne et al., 2019).

Chronic Pain: Pain that is present for more than three months; cause and location of pain may be unspecified (Mayo Clinic, 2016).

Chronic Pain Providers: Providers specializing in treating chronic pain management *(Cleveland Clinic, 2017).*

Cognitive Behavioral Therapy (CBT): A type of therapy that is widely used to treat chronic pain and depression respectively and conjointly. The treatment challenges cognitive distortions and offers a different way of perceiving distressing situations (Ward, 2021, November 21).

Comorbidity: Doktorchik et al. (2019) refer to comorbidity as more than one condition co-occurring.

Existentialism: A philosophy that describes individual existence and the meaning of life. As a theoretical foundation, it supports individual freedom and the exploration of the personal meaning of life and purpose (Harris, 2017).

Interventionalist: Medical doctors, surgeons. Alternatively, doctors of osteopathy who are trained in minimally invasive procedures; most often, the procedures utilize

imaging techniques for guidance and placement of medical devices or medications (Manchikanti et al., 2003).

Interventional Treatments: Minimally invasive procedures that intervene in the symptoms or signaling of pain (Manchikanti et al., 2003).

Mental Health Referrals: The process of a provider directing a patient for mental health services through consultation, evaluation, assessment, and treatment (Koehler et al., 2018).

Multidisciplinary Approach to Pain Management: An approach to managing chronic pain conditions with multiple medical and psychological options based on referrals from a central provider (Sokol et al., 2021).

Nociception: The detection of noxious stimuli (Harte et al., 2018).

Nociceptors: Neurons that are activated upon sensation of a noxious or dangerous signal (Harte et al., 2018).

Non-opioid Treated Patients: Patients diagnosed with chronic pain conditions that do not use opioid analgesics to manage pain (CDC, 2021).

Opioid: A natural or synthetic chemical that interacts with opioid receptors in the brain to reduce feelings and perception of pain and pain intensity (CDC, 2021).

Opioid-Epidemic: The increase in the manufacturing and distribution of opioids that led to the widespread occurrence of opioid abuse, misuse, disorders, overdoses, and deaths (U.S. Department of Health and Human Services, 2021).

Opioid Overdose: A poisoning injury to the body due to opioid ingestion (Goldenberg, 2020).

Opioid-treated patients: Patients diagnosed with chronic pain who are treated with opioid analgesics (CDC, 2021).

Pain: A noxious sensation that occurs in response to stimuli (Goldenberg, 2020).

Pain Clinic: A clinic dedicated to diagnosing and treating chronic pain (Fishman et al., 2010).

Pain Management: The branch of medicine dedicated to reducing pain (Cleveland Clinic, 2017). Reduction methods may include Western and non-Western pain management techniques.

Pain-Related Psychological Distress: Psychological distress caused by pain stimuli (Bérubé et al., 2017).

Primary Care Provider: A physician, Nurse Practitioner (N.P.), Physician's Assistant (P.A.), or other providers that see patients for general health concerns and preventative medicine. (Al Achkar, Revere, 2017). Usually a general practitioner, Pediatrician, Family Medicine provider, or Internal Medicine provider.

Psychological: A factor in the biopsychosocial approach to managing pain attends to chronic pain's psychological aspects (Ballantyne et al., 2019).

Psychological Assessment Tools or Measures: A psychological assessment refers to gathering and measuring data using a psychometric activity to identify elements of various constructs for decision-making and care planning (American Psychological Association, 2020).

Quality of Life: The individual perception of position in life in context with culture and value systems (Hendren & Foster, 2016).

Sociological: Indicates the social component to the biopsychosocial model of pain management that affects the overall pain experience (Ballantyne et al., 2019).

Stigma: In the U.S. Department of Health and Human Services (HHS) (2019) task force for pain management, the task force refers to stigma as the perceived judgment or mark of disgrace associated with elements of chronic pain.

Suffering: The emotional or physical reaction to pain induced with feelings of hopelessness, intolerability, helplessness, and uncontrollability. This is a response to the threat of intactness of self-concept, self-worth, integrity, and identity (Fishman et al., 2010).

Suicidal Ideation: Thoughts, feelings, wishes, desire to take one's life (Racine et al., 2017).

The Patient Health Questionnaire-9 (PHQ-9): A self-report psychological tool made up of nine questions to assess depression. The tool is valid and reliable based on extensive statistical analysis and is frequently used in people with chronic conditions (Sun et al., 2020).

Ten Point Pain Scale: A scale that rates pain from 1-10. The numbers represent 1 being the lowest level of pain and ten the highest level of pain (Olatoye, 2019)

Assumptions

There are four assumptions of this study. First, it is assumed that providers who treat chronic pain understand that their patients are more susceptible to depression than those without chronic pain. A second assumption is that these providers understand how to use and score the PHQ-9 accurately and provide mental health referrals when

indicated. In line with this assumption is that patients will understand how to complete the PHQ-9 and answer the tool accurately. The final assumption presumes that patients provided a mental health referral will carry through and schedule an appointment for the services. This next section will discuss these assumptions in detail.

Although it may be assumed that all pain providers are aware of the prevalence of depression in chronic pain, the assumption may not be accurate. Depression and chronic pain are conditions that are often found together and have many similarities that may be difficult to discern. When two conditions occur together, they are called comorbidities. Some diseases have common comorbidities, as is the case of chronic pain and depression (Mayo Clinic, 2016). Providers who treat conditions that have recurring comorbidities must be aware of the co-occurrence and screen for the presence of such. Therefore, a pain provider must be attentive to signs of depression before the symptoms interfere with activities of daily living and quality of life (Goldenberg, 2020).

Providers aware of the high incidence of depression and chronic pain must also be aware of the importance of screening for depression in their patients, including patients who are treated with and without opioids (Racine, 2016). Reliable and valid tools to screen for depression must be considered for use in all contexts and especially in a population of patients where depression is so prevalent. One such tool that has consistently shown high rates of reliability and validity is the PHQ-9. The PHQ-9 is one way to quickly and effectively screen all patients with chronic pain. An added benefit of the PHQ-9 is the ease in scoring the results. After the patient completes the form, the scores are added up, and the total score reflects the level of depression based on the

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition criteria (Levis et al., 2019).

Just as the provider giving the PHQ-9 must be trained on how to use it, patients who are asked to complete the PHQ-9 must also understand why it is given and how to complete it. Assuming the patient understands what is being asked of them can be a problem if they do not understand. The PHQ-9 tool, for instance, would not be of use to a patient who is illiterate and does not share this with the provider. So too, a patient who assumes their pain provider gives them the PHQ-9 to complete because the pain is psychological may lose trust in the therapeutic relationship. The PHQ-9 is a self-report measure where the questions could be left open to interpretation as the symptoms of depression, like pain, are subjective. There is also the concern of context when the patient completes the questionnaire regarding the day's mood. And if they are feeling stigma, they may fear they will be judged if they answer accurately (Rayner et al., 2016).

Even when the PHQ-9 is administered, and the score indicates that a patient may be depressed, it may be assumed that opioid and non-opioid treated patients who are provided a referral for mental health services will make and attend an appointment for mental health evaluation and treatment. This assumption may be limiting if chronic pain providers do not explain the purpose of the PHQ-9 and the resulting mental health referral. A once-a-year or every two-year mental health referral in some pain clinics is part of their treatment agreement or controlled medication agreement (CMA). Even when the referral is understood, and the patient attends a session, they may be doing so to carry out their treatment requirements. Tracking the scores of the PHQ-9 and the generated

referrals may strengthen provider adherence to best practices for opioid and non-opioid treated chronic pain patients (Bérubé, 2017). In turn, the results of this study provide information that may add to the development of guidelines for chronic pain clinics in assessing for depression and for providing mental health referrals.

Limitations

As discussed, the assumptions bring about potential limitations of this research. Self-report measures are often unreliable in individuals because of context, stigma, and timing. Another potential limitation of the current study was using archival data from the dedicated pain clinic which may be incomplete, inaccurately collected, or unreliably recorded. Using de-identified data can be a limitation due to the specific nature of the population and the number of variables in individual clinics. Governing the participation of a pain clinic in one geographical region is yet another potential limitation. Researcher bias is a possible limitation to address as this researcher has worked in a dedicated pain clinic and has personal experience with chronic pain.

Scope and Delimitations

The boundaries of the population and generalization that may have occurred as a result, may delimit this project's scope. These delimitations include using de-identified data from a single point in time a wider range of time would yield a more complete representation. This project does not consider a large geographical region and may be a poor representation of the intended population. The scope of this study is general and does not consider subgroups of chronic pain, such as specific conditions. This study used chronic pain in broad terms and does not categorize the participants by type of chronic

pain. Another area not addressed in the current study is that of all chronic pain patients being at risk for depression and rather, focuses on just comparing those treated with or without opioid medications.

Significance

With the opioid epidemic as it currently is in regard to overdose and deaths and the rising numbers of suicides among chronic pain patients treated with and without opioids, the results of this data may contribute to better practices in pain clinics. Furthermore, the results may aid in developing and establishing guidelines for pain clinics. The data may also influence safer prescribing guidelines for chronic pain providers (U.S. Department of Health and Human Services, 2019). As established in the research literature and this chapter, untreated depression, when coupled with chronic pain and opioid use, considerably increases the chance of suicide. Enhancing the awareness of both policymakers and those who treat chronic pain with and without opioids about the relationship between regular depression screening and the importance of mental health referrals may increase assessment and referrals provided to these patients.

Furthermore, and relative to the importance of addressing existential concerns in chronic pain patients is the prevalence of depression in these individuals. Individually, these matters are protagonists in provoking existential questions related to meaning and existence. Together, the conditions may invoke a greater risk of existential crisis in these patients, especially in those who lack supportive systems (Dysvik & Furnes, 2018). Because of the high incidence of existential crisis in patients with chronic pain and those afflicted with depression, providers must be aware and open to conversations about these

difficulties. While biopsychosocial treatment models of chronic pain may include

psychological interventions, multidisciplinary models may not adequately track the use of

assessments and the number of referrals provided for moderate to severe scores (Ehde et

al., 2018). Discussing potential existential concerns that emerge with these conditions

allow for better, more effective practices in chronic pain management and positive social

change for this population.

From the standpoint of social change, the results of this study intersect with three

prominent public health concerns: the opioid crisis, the suffering of individuals afflicted

with chronic pain, and the astronomical cost that chronic pain brings to society

(Dahlhamer et al., 2016). Opioids and biopsychosocial factors that organically come with

the chronic pain experience present challenges for patients with chronic pain. These

challenges include stigma, inadequate pain control, the ability to perform activities of

daily living and occupation, and they create profound physical, emotional, and social

angst. The suffering these patients face not only impacts them individually, but also

creates interpersonal and intrapersonal suffering that generates feelings of hopelessness,

helplessness, and alienation (Goldenberg, 2020). The cost to society is also profound. In

2016 alone, the CDC estimated that the of cost of chronic pain to society to be $560

billion and rising each year in medical care costs, disability programs, and loss of

productivity in the United States (Dahlhamer, 2016).

This research promotes positive social change within the chronic pain community,

including patients, their loved ones, medical, and psychological providers. It adds to the

proficiency in healthcare workers' work and enhances compassion for these patients from

medical and psychological professionals working with them. Information from this study also exceeds current treatment modalities within the biopsychosocial and multidisciplinary frameworks. Through the alliance of medical and psychological professionals, pain programs have the opportunity to advance in the techniques they use to treat chronic pain conditions. By the same token, researchers can add to the literature on chronic pain and depression and offer a new perspective. Overall, the implications for positive social change for chronic pain patients are high and these research results may help to reduce opioid use, misuse, overdose, and suicide.

Summary

Chapter one describes the study in overview, including the problem statement, the study attempts to address the purpose and significance of the study to society. The research problem asks if opioid-treated chronic pain patients are being assessed for depression, and if so, are specialized pain providers providing mental health referrals for those who score in moderate to severe ranges. This study takes a biopsychosocial approach with consideration of existential aspects in examining the process of screening for depression and providing mental health referrals in multidisciplinary pain clinics. The nature and need for this quantitative analysis are explored; definitions used in the study and the limitations and delimitations are outlined. Finally, the potential and significant changes to society are presented.

Chapter 2: Literature Review

This chapter reviews the frequency of depression screening and mental health referrals from pain clinics for both opioid-treated and non-opioid-treated patients is unknown. Included in the unknown is the lack of agreement on definitions in pain management, as will be noted, more information on this will follow in the proceeding sections. Furthermore, minimal research has examined how PHQ-9 scores and referrals from pain specialists for mental health services for their patients are related. As such, this literature review introduces and examines these variables and synthesizes current literature with the prospective theories in this study. While much of the scientific knowledge about chronic pain is informed by the biopsychosocial perspective, there is minimal research about existential issues and how they impact chronic pain, depression, and mental health referrals. As early pioneers of chronic pain research and modern-day scientists agree to be effective, this research explores pain management from the multidisciplinary patient care model.

Measuring Depression in Opioid-Treated Chronic Pain Patients

Although researchers have proven a link between chronic pain and depression, the link is not well understood. With such an established link, it could be reasoned that clinics that specialize in chronic pain management would screen patients for depression with a reliable tool such as the PHQ-9. It could also be reasoned that pain clinics would provide mental health referrals for patients that score in the moderate to severe range on the measure. From a thorough review of the literature on the topic, there appears to be little research on depression screening in pain clinics and the number of mental health

referrals generated from the scores. This is especially critical because of the high risk of depression in this population and the number of patients treated for chronic pain with and without opioid pain medications. Another area that requires exploration is the comparison between the number of opioid and nonopioid treated chronic pain patients who receive mental health referrals based on their scores from the PHQ-9.

Organization of the Chapter

Five major sections will be outlined in Chapter Two of this study. The first section provides a description, purpose of the research, and methods used to conduct the research. The second section defines key terms and identifies the databases used to search and develop the review. In the third section, the theoretical foundation is identified, components of the theoretical foundation are stated, and the rationale for using this foundation is justified. The fourth section describes the historical background of the main topics. Finally, the fifth section presents the reader with the integrative synthesis of the literature.

Based on Bonica's (1953) multidisciplinary model of chronic pain theory, assessing the mental health of opioid and non-opioid treated patients with chronic pain is an essential part of treatment. Nevertheless, millions of Americans live with chronic pain and struggle with this health concern without access to mental health resources. For these reasons and more, the literature review explores the hypothesis that dedicated pain clinics are not methodically assessing their chronic pain patients for depression. This review will also show that chronic pain patients, those treated with opioids, compared to those who are not, may not be receiving referrals for mental health services. Fundamentally, this

literature review aims to note past research and address the gap in the literature. Chronic pain remains one of the oldest conditions in healthcare, it continues to perplex the medical providers, and as such, it is essential to review the current base and move beyond to allow for new perspectives. Because all chronic pain patients, despite treatment with opioids or other pain medications, are at considerable risk for depression and suicide, it is necessary to more fully explore opportunities to enhance treatments for chronic pain.

Literature Search Strategy

Keywords and descriptors used to identify the topic of mental health interventions from pain specialists for at-risk patients include depression and chronic pain; chronic pain and suicide; opioid use and chronic pain; psychological interventions in chronic pain patients; chronic pain; pain management clinics; opioid use; the opioid epidemic; existentialism and chronic pain; existentialism; chronic pain, suicide; multidisciplinary approaches to chronic pain; biopsychosocial models of chronic pain management; PHQ-9; and chronic pain specialists.

Databases Used

The articles in this review represent the keywords and the descriptions used in the Boolean operators. Some of the databases used are PsychInfo, PubMed, National Institute of Health Public Access research resources, Substance Abuse and Mental Health Services Administration, Walden University Library EBSCO database, Santa Clara County Library database, the Mayo Clinic, Google Scholar, and the American Psychological Association member database. The International Association for the Study of Pain (IASP), the British Medical Journal (BMJ), and the American Academy of Pain Medicine

are also used. Additionally, Elsevier and SAGE publications were searched for peer-reviewed medical and psychological articles. Most of the information reviewed is has been published within the past ten years with the exception of historical or seminal contributions to this study. As outlined in Chapter One, terms related to chronic pain, the opioid epidemic, suicide, and screening for depression were taken from various sources. Literature on biopsychosocial models of chronic pain management, existential theory, and the multidisciplinary care model was extracted from books, articles, and journals.

Theoretical Foundations for Chronic Pain and Depression

Chronic pain is a complicated condition with several possible comorbidities. One such comorbidity is depression which is seen in over half of all chronic pain patients (Sternke et al., 2016). When treated with opioids, the incidence of depression, overdose, and suicide is even higher (Petrosky et al., 2018). Because of the complicated nature of pain management, several theoretical foundations have been conceptualized to understand the field better. The emergence of these frameworks began later in the 20th century when it became clear that the biomedical model limited this understanding (Ballantyne et al., 2019). Two such theories, biopsychosocial theory and multidisciplinary pain management theory, are explained in this next section.

Identification of Biopsychosocial Theory

Biopsychosocial theory is an approach to managing both medical and psychological conditions from different perspectives. Regardless of whether the condition is medical with psychological features or medical comorbidities, a biopsychosocial approach allows for treatment within the distinct disciplines (Mescouto et al., 2020). A

benefit of the model is that it recognizes each patient as a diverse individual in unique situations, offering treatment of the whole individual and not just the condition. The approach is used in various healthcare settings and is used in chronic settings such as for the management of chronic pain. Managing chronic pain from the perspective of the biopsychosocial model has been, and still is, a staple in the treatment of chronic pain. Because of the complexity of chronic pain and the wide range of patient needs, an approach that includes an array of therapeutic modalities is found to be the most effective (Mescouto et al., 2020).

Patients who experience chronic pain often face challenges due to their experience of pain. According to biopsychosocial theory, instead of treating just the physical symptoms of chronic pain, all potentially relevant factors are assessed and treated to augment the health and healing of the individual. Physically, patients may find changes in their everyday routines, including decreased to care for themselves and loved ones; loss of income, and changes in social stature. These changes likely contribute to the alarming rates of depression among chronic pain patients. Finding a new normal, a task that can be daunting to patients regardless of their condition, can be arduous if an individual cannot accept that their abilities have changed. Psychological conditions such as depression may arise if they are susceptible, genetically predisposed, or due to biological or environmental factors. If these comorbidities are ignored or overlooked, the symptoms and severity may progress.

Understanding why the biopsychosocial model effectively treats chronic pain is essential to understanding how the model developed. In the mid-20th century, healthcare

was dominated by the biomedical models in which providers believed that illness resulted from biological or biochemical changes in the body (Ailts et al., 2020). At that time, a biomedical model emphasized the disease, including the biological components used to diagnose the disease, such as the evaluation of symptoms of, and quantified findings from, medical testing to assess the disease. As healthcare advanced, biomedical model had several limitations. One limitation was that the model limited the treatment of disease to medicinal remedies. It also did not consider the patient's subjective experience of illness and disease or take into account how the therapeutic relationship between provider and patient influenced treatment outcomes (Ailts et al., 2020).

The biomedical view offered a narrow focus of disease processes and presented a linear reductionist representation of causation; patients were referred to as their symptoms and disease, as subjects, instead of as whole individuals. It became apparent to professionals that a new approach was needed, one without so many limitations and one that considered patients holistically. Engle (1977), a psychiatrist who was versed in treating chronic conditions that impacted mental health, and colleagues, founded a new model that would expand on the biomedical model and add to the management of disease conditions. This model, coined the biopsychosocial model, was first mentioned in Engle's article in *Science* in 1977 (Mescouto et al., 2020). The term biopsychosocial refers to the biological, psychological, and socio-environmental factors in medical and psychological contexts of healthcare, including pain management (Mescouto et. al., 2020). The new angle incorporated social, behavioral, and psychological, into the treatment of illness, especially chronic conditions (Mescouto et al., 2020).

Engle (1977) believed that understanding patients' suffering would allow providers to respond more effectively to the patients' needs more adequately and give them a sense that they were understood. He argued that biology was not a sufficient argument for disease, that psychological and social influences affected the disease process and progression. Engle thought that limiting the scope of care to the biomedical approach dehumanized and degraded the human and affected health-related outcomes (Ballantyne, et. al., 2019). As a result of his work, biological, psychological, and social dimensions of illness were recognized as enhancing treatment and understanding the chronicity of an illness and treatment prognosis. His beliefs fortified the biopsychosocial model as a holistic alternative to the biomedical model in that it addressed illness as a mix of biopsychosocial factors (Engle, 1977). Going beyond the nature versus nurture debate, Engle noted that the interplay of biological, psychological, and social dynamics affected both mind and body interactions.

Although the biopsychosocial model was created for healthcare in general, Dr. Engle applied it to the management of chronic diseases, especially chronic pain management (Engle, 1977). At this time, his message reached other medical professionals who recognized that the biomedical model lacked empathy and compassion (Lugg, 2021). A seminal work by Dr. Wilbert Fordyce (1976) furthered the newly identified biopsychosocial model for chronic pain with behavioral context and conditioning (Sullivan & Nicholas, 2018). Dr. John Loeser added another dimension to the model by synthesizing nociception, pain, suffering, and pain behavior principles into the biopsychosocial management of managing chronic pain (Fishman et al., 2010).

Between Engel, Fordyce, and Loeser, the biopsychosocial model was established (Engle, 1977; Sullivan & Nicholson, 2018; Fishman et al., 2010). With the manifestation of the biopsychosocial model, the importance of adding psychological, social contextual, and biological characteristics was emerging. Personalized treatment plans for chronic pain management were realized as a preferred method of treatment versus standard treatments that were not always the best option for all patients (Ballantyne et al., 2019).

As the biomedical model was being phased out as the preferred treatment method, the multidimensional interaction between physiological, psychological, and social factors, and their influence upon one another, was realized (Zoffness, 2020). The new model provided options outside the standardized care plan that optimized treatment outcomes. Specifically, the biopsychosocial model afforded providers the option to understand how chronic pain affects psychological well-being, social factors, such as family, work, and recreational activities. With the transformation of the medical model of pain management to a more complete approach, pain providers could target dimensions of pain from a more holistic perspective.

Components of Biopsychosocial Theory

Today, it is well understood that pain is a phenomenon that, when present, affects the body and the mind 100% of the time. Dr. Rachel Zoffness, a leading pain psychologist, finds that the biopsychosocial model effectively explains pain from the intersection of biological, psychological, and sociological domains (Ward, 2021, November 21). Figure 1 shows how biological factors such as physiology and genetics influence pain perception (Adams & Turks, 2018). The figure includes psychological

factors such as depression, catastrophic thinking, and perceived control that contribute to

the overall pain experience (Adams & Turks, 2018). Social factors such as

socioeconomic status, operant conditioning, and support systems are all part of how a

patient interprets chronic pain (Adams & Turks, 2018). From this perspective, it becomes

clear that the pain experience is unique to the individual and cannot be standardized

across each domain.

Figure 1

Pain Experience and the Biopsychosocial Model
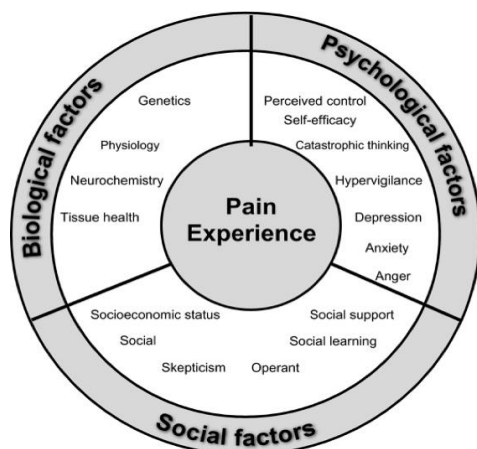
Zoffness dissects the model further, noting that the biological component refers to

the physiological pathology of disease. From biological considerations, the pathology of

disease depends on many variables and may be confirmed through scientific measures.

Symptoms that meet specific criteria, for example, can be indicative of a specific

condition that may or may not include tissue damage (Zoffness, 2020). Although

symptoms widely vary from individual to individual, often, they prompt the provider to

begin to diagnose a condition if the available testing measure is available. Testing

measures may include diagnostic procedures, laboratory testing, and/or imaging tests

(Mayo Clinic, 2016). Once testing confirms a diagnosis or diagnoses, the proper measures can be taken to treat the injury, illness, or disease.

Combined with the biological piece are genetic vulnerabilities. In some cases, individuals who are genetically predisposed may be more likely to be diagnosed with the same disorder as a relative. Kummer et al. (2020) suggest that neurochemistry may also influence biology. For instance, a pain patient with a psychological diagnosis prior to experiencing the pain condition may struggle with depression more than a person without depression (Kummer et al., 2020). The Mayo Clinic pain clinic (2016) finds that diet and lifestyle may also add to the biology of chronic pain; an individual who lacks proper nutrition may have difficulty healing from a wound or may not be able to complete treatment if their lifestyle is not compatible with the most effective therapy. Drug effects can influence the biology of chronic pain with addiction, adverse reactions, or tolerance of side effects. These elements may hinder the ability to cope with and heal from a pain condition (Ballantyne et al., 2019).

The psychological part in the biopsychosocial model refers to the thoughts, emotions, and behaviors that affect disease. Psychological distress, for instance, may cause increased pain and pain-related symptoms (Zoffness, 2020). Fear and inadequate coping mechanisms may also play a role in the progression and outcome of chronic pain. Patients who fear they will never heal, or those fearful of the treatments available to them, may not seek the suggested services. Inadequate coping mechanisms may lead to harboring pain-related patterns and behaviors (Ward, 2021, November 21). Distraction

and meditation techniques are regularly used to manage pain, but patients who are unable or unwilling to try these techniques may not benefit from the proven results.

Behavior can impact pain; maladaptive behaviors such as restrictive routines may limit the patient's willingness to comply with treatments. Avoidant behaviors, where individuals avoid physical activity altogether because they believe that any activity will disable them, may also interfere with treatment. Addiction behaviors are part of the biopsychosocial model, although, as research shows, they may also have biological dimensions. A study by Kaboré et al., (2021) found that patients who doctor-shopped were more apt to abuse opioid medications than patients managed at a primary pain clinic. The behavior of doctor-shopping can pose psychological and social implications (Kaboré et al., 2021). Behaviors that impede treatment or contribute to the lack of treatment are all parts of the biopsychosocial model that may be interrupted when the model is appropriately applied.

Sociological factors such as socioeconomic status, economic status, environment, cultural, family, and work dimensions add to the chronic disease process (Lugg, 2021). From this perspective, a social consideration of chronic pain may be that the person with chronic pain may not be as able to care for themselves and their family. Especially when they are the primary financial provider for the family, the loss of income and benefits may cause shifts in lifestyle or social interactions. Individuals may also find that they cannot partake in hobbies or recreational activities with friends and loved ones; many studies have described how peers soon forget patients who were once active after they are asked only a couple of times to partake but decline. In an article by Hruschak and

Cochran (2017), the authors explore the link between chronic pain and individuals and society in general. The societal impact of chronic pain is massive, in economic, social justice, and environmental contexts, and negative (Hruschak & Cochran, 2017).

Considering that many pain patients note feeling ignored or brushed aside when seeking care related to chronic pain, it would be remiss not to include how opioids modify the ways in which chronic pain patients are viewed. From a societal perspective, patients with chronic pain are not assumed truthful and are often viewed as addicts. Kosson et al. (2018) analyzed aggression and anxiety in patients attending pain clinics and found that many patients described being told by members of the medical profession that they are faking a pain condition or catastrophizing pain symptoms even when they purposely downplayed the severity. Pain patients often note how negatively they are treated in emergency rooms and departments when seeking care for chronic pain and acute injuries or illness (Bohnert et al., 2018). A common complaint heard in pain clinics is regarding the attitudes and beliefs of other providers they have worked with for chronic pain. Patient's report being accused of drug-seeking or of abusing opioids even when they are not taking these types of medications.

Rationale for Selecting Biopsychosocial Theory

As reviewed, any one focus of the biopsychosocial model is not sufficient in managing chronic pain, nor is one focus appropriate for treating depression. Just as biological, psychological, and sociological factors influence each other, so too do chronic pain and depression. Understanding how the conditions continuously interact provides a framework for treating the comorbid conditions (Adams & Turk, 2018). This

biopsychosocial framework describes the intersection of biology, psychology, and sociology and explains the consequences if portions of the framework are left unattended. Just as pain is ubiquitous to each pain patient, so must the treatments provide the best possible individualized plan of care for the chronic pain condition. Determining the course of treatment and the potential outcome of that treatment on chronic pain while considering the patient from a holistic approach significantly increases the chance of positive outcomes. (Gatchel et al., 2007).

The rationale for choosing the biopsychosocial model of pain management for this research project was threefold; there are three factors of the model and each factor influences the others (Ward, 2021, November 21). Pain is not simply a physical pain felt due to apparent injury, illness, or tissue damage; it is a conglomeration that goes beyond the biological, psychological, and sociological features. Included in the configuration of pain are cultural, neurobiological, neurochemical contexts. Adams & Turk (2018) explored how biological, psychological, and social factors worked together independently to influence the chronic pain experience. They concluded that medical interventions alone are not as successful at treating and curing chronic pain disorders (Adams & Turk, 2018). By implementing psychological and social elements that emphasized the heterogeneity in the patient experience, the prognosis and treatment outcomes were considerably more productive than the medical intervention alone (Adams & Turk, 2018).

Synthesized Research Findings Related to Theory

Zoffness reports on the biopsychosocial intersections of pain as contributors to the pain experience (Ward, 2021, November 21). The brain is a diffuse contributor to pain;

imaging studies show that there is not one part of the brain that affects pain, nor is the

contribution purely biological (Zoffness, 2020). Magnetic resonance imaging (MRI)

demonstrates some of the parts activated in the brain when pain is present, including the

sensory cortices, insula, anterior cingulate cortex, prefrontal cortex, and the limbic

system (Breeden, & Rowe, 2017). These areas are also associated with mood, emotion,

and executive functioning. Specifically, as noted by multiple researchers, the limbic

system is the brain's emotion center that filters all sensory signals from the body before

pain is experienced (Ward, 2021, November 21). Several studies have found that the

amygdala, part of the limbic system, is a portion of the brain that controls emotions; these

studies support an association between the amygdala and the chronification of pain (Yang

& Chang, 2019).

Wang also reports on diffuse neurological processes at work that impact pain

perception (2019). As Wang and other researchers remarked, the cerebral cortex, the part

of the brain responsible for thoughts, is one of the neurological structures associated with

the pain experience (Wang, 2019; Yang & Chang, 2019; Zoffness, 2020). Another part

that influences the pain response is the prefrontal cortex which is responsible for

executive functions such as decision-making and focus (Kummer et al., 2020). Specified

research areas have found that distraction techniques, attending social settings, and

cognitive behavioral therapy can be used to change the perception of pain. As inferred

from the available literature and as detailed throughout this study, pain perception is not

based on a superficial biological layer. Instead, it is a multilayered system of

biopsychosocial components at play. Not just limited to these structures and neurological

processes, the biological portions of pain add to the layered dimensions of the biopsychosocial components of pain.

A strength of the biopsychosocial model is that it mirrors an evidence-based model to treat depression. Depression, like chronic pain, involves biological systems, psychological factors, and social considerations (Sheng et al., 2017). Also, like chronic pain, the effectiveness of treatment for depression is increased when physical wellness is addressed and when disease, illness, and injuries are adequately assessed and managed (Sternke et al., 2016). With the flexibility of the biopsychosocial model as a frame, one of its major strengths is treating the conditions conjointly instead of as separate conditions. While they are undoubtedly different when addressed as comorbidity, all layers are examined (Sheng et al., 2017). This is a part of why pain providers need to assess all patients for depressive conditions that impact the pain condition.

Biopsychosocial Theory Related to Research Questions

Biopsychosocial theory relates to all research questions, as the questions are directed at all pain patients attending the involved pain clinic. Question number one asks about depression screening for all patients using the PHQ-9, which is an appropriate test used for chronic conditions as reported by Kroenke et al., (2001). The second question delineates between opioid and nonopioid treatment which offers specifications for treatment for each population and expands on the research used in clinics that use the biopsychosocial model. The third question inquiries about a relationship between moderate to severe PHQ-9 scores in patients undergoing treatment with and without opioids. Each group, those treated with or without opioids, has a unique set of

biopsychosocial elements to add to their pain experience. Grouping these patients allows future researchers to expand on the specific elements of both groups. The fourth question represents the core of this research, asking if there is an association between PHQ-9 scores, opioid-treated compared to nontreated opioid patients, and the number of mental health referrals generated.

Identification of Existential Theory

Existential theory is an historical framework that was philosophized before Plato, Aristotle, and Socrates, and today and is a modern school of thought regarding the meaning and purpose of existence (Cromwell, 2020). Existentialism from this research perspective explores the relationship between the chronic pain patient and the pain provider and the application of purpose and meaning to the treatment of chronic pain. Building on philosophical origins and modern-day existentialists, existentialism offers a foundation for chronic pain providers to address the existential needs of their patients. Addressing these needs can be initiated first by screening chronic pain patients for depression and calculating the scores. Next, pain providers can offer a mental health referral for patients that score in the moderate to severe range. Just screening the patients and discussing the reason for screening can begin a conversation about the patient's existential needs (de Siqueira, 2018). From the existential perspective, most chronic pain patients will likely face existential crises at some point while treating for chronic pain. Indeed, past research suggests that medical practitioners specializing in chronic pain noted that most of their patients struggled with existential difficulties (Andersen et al., 2020). Pain providers often face patients who are desperate for pain relief and want to

participate in the activities they once enjoyed. Other patients voiced frustration for no

longer providing for their families as they had before the pain condition. Still, others

complain of losing loved ones, friends, and social status because of chronic pain. For this

study, existentialism theorizes that people who suffer from chronic pain will encounter

existential questions and concerns related to chronic pain.

Components of Existential Theory

Existential theory, or existentialism, in short, is the philosophy of human

existence. At the core is the nature of meaning and purpose of existence, emphasizing

individual freedom and individuals' choice to make rational decisions in an irrational

environment (Crowell, 2020). Stakeholders of the theory are referred to as existentialists.

Throughout the development of the theory, existentialists have held to differing views on

human existence, although there are several common themes within the views. One

common theme is that humans are not given a purpose by nature or God but work to find

their purpose (Zieske, 2020). Another theme is that those who believe in a god must work

through their faith to find purpose in their beliefs.

Therefore, existentialism holds that each person is responsible for deciding who

and what they are through their work and findings (Zieske, 2020). The essence of

existentialism imparts that people are responsible for themselves, especially defining

their meaning of existence. Each person may have a different definition of meaning and

purpose unique to them. Those who do not work towards meaning and purpose will most

likely, never find internal peace. When there is a lack of purpose, existential conflict

occurs, and existential crises arise. From the perspective of one of the most well-known

existentialists, Jean-Paul Sartre (1905-1980), people are born to define their meaning and purpose (Sartre, 1966).

A second theme of existentialism is the notion that people are responsible for what they make of their lives by deciding their fate regardless of social or biological influences (Sartre, 2020). Humans have the freedom to consider these elements, define them, and make choices on how they factor into their existence. Many existentialists believe a third theme is how individuals must learn to identify the most authentic, most satisfying way of life and apply it to their way of life (Sartre, 1966). Anxiety and fear play into this theme as a driving force for change. When one faces discomfort related to anxiety and fear, one can make sense of the experience and see it from a more rational point of view. In this sense, the experience that initiated the discomfort becomes clearer.

Rationale for Selecting Existential Theory

Individuals who endure chronic pain often face what is known as an existential crisis where internal and sometimes external discomfort occurs in the form of pain, depression, and fear that overwhelms them. At that point, there becomes an eagerness for change, to transcend from the discomfort (Butėnaitė-Świtkiewicz et al., 2016). Chronic pain as a singular factor can change a person's life completely. Add in other factors that come along with chronic suffering, such as the root cause of the chronic pain and the trauma associated with the cause, and existential crises in the form of depression, anxiety disorder, phobia, or PTSD may develop. Losing a job due to the inability to perform the required duties or the loss of a loved one who does not understand the echoing effects of chronic pain are other predecessors of existential crises. Because of the dramatic shifts

and potential for existential crises, the theory applied to chronic pain is relevant to this study.

According to de Siqueira (2018) and Andersen et al. (2019), chronic pain patients often struggle with the meaning of life or existential issues that impact motivation, coping strategies, and treatment outcomes. Moreover, de Siqueira (2018) indicates how existential stressors add to the development of symptoms or increase in pain symptoms. These symptoms may lead to a degeneration of functionality, quality of life, and in some cases, suicide. Because of these risks, pain providers must be adept at identifying when a patient faces these challenges. Sexton-Radek & Chami (2013) and Ehde et al. (2018) discovered that chronic pain and the resulting difficulties are best treated from a multidisciplinary approach. A multidisciplinary care model encompasses modalities that may include pharmacological, behavioral, and interventional procedures to treat chronic pain.

Noted in multiple studies, the common denominators in chronic pain are anxiety, fear, and depression. One article notes that more than fifty percent of all people with chronic pain will face a depressive episode or chronic depression (Dezutter et al., 2016). Another article by de Siqueria (2018) suggests that treatment outcomes improve when the treating pain provider addresses existential concerns. People treated with opioids face further existential concerns influenced by biological and psychological factors. An example of this influence is how chronic pain and depression follow many neural pathways (de Siqueria, 2018). Similarly, opioids depress the central nervous system and cause structural changes in the brain (de Sequeria, 2018).

A case study by de Siqueria (2018) discussed the relevance of how four patients perceived the topic of the meaning of life when coping with chronic neuropathic facial pain. The study's premise was that the most effective pain management strategies included patient participation in decision-making, goal setting, and the treatments used. The participants in the study all reported feeling trapped or kidnapped by their pain condition. They reported feeling devalued and depersonalized by pain and expressed that it was difficult to find meaning in their lives (de Siqueria, 2018). According to existentialists, motivation is driven by existential meaning; when meaning is absent, individuals lose the initiative to participate in active living (Frankl, 2006). As it relates to chronic pain, this theory suggests that chronic pain patients who lose or question meaning will more than likely be unmotivated to participate in the management of their pain.

Further explained by de Siqueria (2018), chronic pain patients are best assessed from an individual perspective, where each person has the opportunity to express their interpretation of symptoms. Providers who care for chronic pain patients will empower their patients by acknowledging them not as other patients but as unique persons with unique experiences (de Siqueria, 2018). Existential issues for chronic pain patients are common and multifactorial; being a proactive provider and allowing the patient to address these factors early is crucial in pain management. While the provider cannot force the patient to address existential concerns, the provider can encourage patients to discuss these issues. Nor can the provider define meaning about chronic pain; the patient must realize meaning and purpose. When existential concerns are addressed within the

milieu of chronic pain, the patient can be guided to understand the symptoms of pain outside of who they are but as something they experience (de Siqueria, 2018).

From a social perspective, many people with chronic pain describe a loss of social standing and relationships because of the stigma associated with chronic pain. Patients who use opioids to treat their pain may face advanced scrutiny (Dezutter et al., 2016). Financially chronic pain patients may not be able to afford hobbies with a social outlet. Psychologically, the loss of a career can impact a sense of purpose and belonging in society and be viewed as a form of loss that can trigger a depressive episode. The chances of depression can increase when someone is predisposed to depression from a history of depression or a genetic predisposition. People may voice these concerns to their pain providers in indirect ways.

More often than once evidenced, individuals with chronic pain question their position in life and why they keep going (Dezutter et al., 2016). They question their existence and meaning and grieve the loss of their abilities and the person they once were (Dezutter et al., 2016). A study like this may answer questions for researchers, caregivers, providers, and patients with chronic pain. New treatments, therapies, and educational opportunities developed as a result of this research may provide an understanding of the significant impact of chronic pain. Therefore, a study that focuses on depression assessment and mental health referrals for patients with chronic pain in pain clinics has the potential to help fill a long-standing gap, and proffer an empirical basis for targeting these concerns

Synthesized Research Findings Related to Theory

The source of existentialism is difficult to pinpoint because the questions of existence, purpose, and meaning are far-reaching. For the purposes of this study, the origin of existentialism is referred to in more modern times, beginning with the works of Soren Kierkegaard (1813-1855), who is often referred to as the father of existentialism, and by followers of the theory to today (Cromwell, 2020). The major tenants of the theory, as described, are the questions of existence, purpose, and the search for meaning in life. Embedded in the theory are subtopics, including rationalism, freedom, and truth. Often thought of as a dark philosophy, existentialism confronts the subjects of death, science, religion, and how these tenants apply to the meaning and purpose of life. Another key component of existentialism is that many of the core existentialists recognize anxiety and the vulnerability of individuals when facing an existential concern (Panza & Gale, 2010).

Chronic pain is a compounded phenomenon that influences biological aspects of the human experience and impacts psychological, social, and existential domains. Dezutter et al., (2016) conducted a study that investigated the level of satisfaction of chronic pain patients relative to the attentiveness of their chronic pain providers. The researchers found a gap in past research consistent with the need for advanced research on how satisfaction with pain providers drives pain intensity, disability ratings, and depression symptoms. Some of the existential challenges noted by the chronic pain participants of the study were adapting to new life goals, concern with mortality, relating to others, freedom, and finding meaning in their existence (Dezutter et al., 2016). The

results were consistent with their hypothesis; pain providers could do more to increase their attentiveness to patients and existential issues to increase overall patient functioning.

Nevertheless, another study sought to determine a relationship between existential factors and outcome factors in a multidisciplinary chronic pain group. In this retrospective cohort study, when existential concerns were addressed in conjunction with the chronic pain, patient functioning increased, and pain symptoms decreased (Bueno-Gómez, 2017). Additionally, the research found negative correlations between meaning, pain catastrophizing, pain intensity, and improved psychological factors such as anxiety and depression (Bueno-Gómez, 2017). The study aimed to analyze how meaning and purpose affect pain symptoms and coping mechanisms for managing chronic pain. To sum up the study, it was found that when existential factors are embossed in the care and management of chronic pain, treatment outcomes are positive and more effective. The implications for the findings suggest that when pain management providers address the existential concerns of their patients, pain intensity and pain catastrophizing decrease, and overall function increases (Bueno-Gomez, 2017).

Existential Theory Related to Research Questions

Existential theory is related to the research questions in several ways. Overall, the research questions focus on depression screening and mental health referrals and the outcomes of who is screened in pain clinics, the calculated scores, and the number of mental health referrals generated. Existential theory, the question of the meaning and purpose of life, is often related to chronic pain, depression, and combined conditions. When existential questions arise, they can cause intrapersonal turmoil or angst. Screening

for depression in chronic pain patients opens up a platform for patients and providers to discuss any existential concerns or challenges the patient is facing. Providing mental health referrals for patients who score moderate to severe on the PHQ-9 offers patients the opportunity for continued discussion on existential challenges and gives them a chance to learn strategies to cope with depression and chronic pain.

There are four research questions presented in this study. The first question asks if pain clinics screen both patients treated with opioids and those not treated with opioids for depression with the PHQ-9 at every visit? The second expands on the descriptive statistics derived from the data and asks what percentage of patients screened with the PHQ-9 are opioid-treated patients. Research questions three and four further the research by testing associations with multiple logistic regression. Question three asks if there is a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to patients not treated with opioids. The final question tests for a relationship between all variables, PHQ-9 scores, opioid-treated patients compared to patients not treated with opioids, and the number of mental health referrals generated for both samples.

The empirical evidence of this literature review notes that pain clinics adhere to the recommended CDC and task force guidelines to screen chronic pain patients (Goldstick et al., 2021). As shown, pain clinics recognize the importance of screening chronic pain patients for depression, especially those treated with opioids. Research supports that some pain clinics will not prescribe opioids unless a psychological evaluation is on profile. The at-risk component of the population is directly related to

existentialism in that depression, and chronic pain brings up existential questioning and concerns. Although it is noted that depression does not beget an existential crisis and vice versa, they are known to coincide in many known cases. Because of the high incidence of both clinical depression and existential crisis, it is imperative to use a tool known for its accuracy to assess the presence of depression.

PHQ-9 Relevance to Existential Theory

Screening chronic pain patients for depression using the PHQ-9, addresses a wide range of biopsychosocial elements and existential concerns and crises that patients with chronic pain encounter. The PHQ-9 is derived of nine biopsychosocial questions that are clustered into mood, somatic, and cognitive categories, and one unscored question as a global indicator to track treatment response (Barton, Barkin, & Miller, 2017). These questions, while not specifically developed to measure existential crisis, are directly related to biopsychosocial existential factors (Barton, Barkin, & Miller, 2017). The first two questions, for example, asks the patient to measure the amount of interest and pleasure when taking part in activities, and feelings of depression, feeling down or hopeless (Kroenke et al., 2001). A depressed or hopeless individual, from an existential perspective, may be amid an existential crisis. Question six pertains to existential concerns with instructions for the patient to measure if they are feeling they are bad, or a failure to others (Kroenke et al., 2001).

Question nine of the PHQ-9 furthers the existential perspective by asking the individual to measure if they feel they would be better dead, and if so, to what extent they feel this experience (Kroenke et al., 2001). At the forefront of existentialism is the

question of existence, whereby individuals seek to understand meaning and purpose in their life. Therefore, the PHQ-9 has the ability to measure to what extent patients rate substrates of existential crises. Question ten, the one not included in the overall score, summarizes and generalizes for the practitioner just how much the notations on the PHQ-9, interfere with an individual from the biopsychosocial standpoint of ability to function, interact with others, and carry out daily responsibilities (Kroenke et al, 2001). Using the PHQ-9 for this research offers a broad perspective of how critical it is to address chronic pain from the biopsychosocial and existential model. As is explained throughout this study, chronic pain patients often face major changes and biopsychosocial challenges related to the chronic pain experience that result in existential questioning.

The PHQ-9 is pertinent to the theory as it is well-known for its reliability and validity and is used in many areas where chronic conditions are treated, including pain management centers in a wide variety of populations (Kosson et al., 2018). The accuracy of the PHQ-9 was evaluated and found to be high in a systematic review using populations older than twelve years of age from 1995-2018 (Costantini et al., 2021). This review explored forty-two studies, with the overall sensitivity of the PHQ-9 ranging from 0.37 to 0.98 and the specificity ranging from 0.42 to 0.99. The positive predictive ranged from 0.09 to 0.92, and the negative predictive value from 0.8 to 1 (Costantini et al., 2021). Another study, a meta-analysis, concluded that the PHQ-9 was more effective than semi-structured diagnostic interviews in diagnosing clinical depression (Levis et al., 2019). These data alone present a compelling case for using the PHQ-9 in a study using the framework of existentialism.

Interestingly, few studies include data on the collection of PHQ-9 scores before and after a mental health referral has been issued by a pain clinic provider for opioid-treated and nonopioid treated pain patients. The implications of the lack of this data could potentially be significant, especially in the realm of existentialism. Research questions two and three relate to existentialism as chronic pain patients may have several existential concerns at hand. As reviewed, these patients often experience significant losses, loss of self-identity, perspective on self-efficacy, financial sources, occupation, and loss of relationships. All of these may be risks for depression, existential crises, and suicide. Collecting the scores may provide data to evidence how mental health referrals decrease scores of depression.

In 2016, the Centers for Disease Control published the CDC Guideline for Prescribing Opioids for Chronic Pain — United States (2016) that described the need to assess for risks associated with chronic pain. Within the guidelines are suggestions to address chronic pain's clinical, social, and psychological consequences (Dowell et al., 2016). The same is true for the Pain Management Best Practices Inter-Agency Task Force Report published by the United States Department of Health and Human Services (2019). In both sets of guidelines, it is recommended that assessment and treatment for mental health conditions be considered when prescribing opioids to patients. The CDC recognized the need for stricter recommendations due to risks of suicide, overdose, addiction, and mental health conditions, all of which enmesh existentialism. While the Centers for Disease Guidelines are directed towards primary care providers and the United States Department of Health and Human Services target pain clinics, both

agencies stress the importance of psychological assessments and treatments to reduce the trauma associated with chronic pain.

Multidisciplinary Model of Patient Care

Central to the problem statement is the need to evaluate depression screening and mental health referrals in pain clinics following a multidisciplinary healthcare framework. A multidisciplinary model of care is a joint effort of various professionals, including providers, physical therapists, psychologists, nurses, and other specialists, who provide health care services. The model integrates multiple therapeutic modalities with the core objective of reducing the severity of symptoms related to pain, improving patients' ability to complete daily activities, and improving their quality of life (Colletti, 2019). At the head of the team is a leader, often a pain specialist, to plan and oversee the plan of care. In a multidisciplinary pain program, patients are regularly assessed and examined by their team leader to determine if adjustments are needed to maximize their care. As the needs of the patient change, so too does their treatment approach.

Components of Multidisciplinary Theory

The basic theory of the multidisciplinary approach is for healthcare workers to collaborate to create and deliver the best possible care for patients. This approach is especially practical for pain management because of the complexity of the treated conditions. In addition to providing the best care for the patient, a multidisciplinary pain management program aims to enhance the quality of care, decrease costs, and deliver the most efficient care for the best outcome (Nichani et al., 2017). Because chronic pain is multifaceted, communication among providers is essential. All care entities do not need

to work under the same roof, but all providers must be aware of the patient's plan and goals and are kept abreast of any changes in treatment or status. Team members may work individually or parallel to other team members, discussing care through discussion, email, or medical records and reports (Saint-Pierre et al., 2018).

The origins of multidisciplinary theory are varied throughout the literature, with some authors claiming it was conceptualized in 1889 with the founding of the Mayo Clinic (Hughes, 2021). The Mayo Clinic was the first of its kind in the United States that brought in teams of physicians from different specialties to care for patients with a myriad of needs (Hughes, 2021). Notations of multidisciplinary care began at the turn of the twentieth century (Hughes, 2021), while others assert that it progressed during World War II when soldiers were returning from war with comprehensive care needs (Nichani et al., 2017). As pain management evolved, the first multidisciplinary pain programs emerged in the 1970s when it became clear to physicians, educators, and researchers that the medical model of treating chronic pain had limitations (Ballantyne et al., 2019). Pain management clinics using a multidisciplinary model are based on the biopsychosocial approach to pain, where biological, psychological, and social aspects of healthcare are addressed. Today, many pain programs consist of teams of social workers, behavioral specialists, and medical specialties that work together with the patient to address their unique needs.

Rationale for Selecting Multidisciplinary Theory

Multidisciplinary care approaches to pain management are not exclusive; multimodal, collaborative care, and integrated care models offer different views on

treating pain. Sometimes used interchangeably, multimodal, collaborative care, and integrated care are different ways to manage pain, as outlined in this section. A multimodal approach uses different modalities simultaneously to treat conditions (Kerns et al., 2018). A program using this model may treat patients with physical therapy, electrical stimulation, and medications. A collaborative care plan will have an identified leader and other caregivers that work under the leader's direction. An integrated model offers a high degree of teamwork that may share medical records and computer systems within hospitals, primary care, and other healthcare specialties (American Psychological Association, 2017).

The rationale for choosing this theory for this study is twofold. First, a multidisciplinary approach to pain management has proven effective in managing pain (Ballantyne et al., 2019). Reports note that patients experiencing chronic pain often have more than pain issues to address to enhance their quality of life (Ehde et al., 2018; McCoy 2016). There are medical conditions present before diagnosing chronic pain and those that may be the catalyst for chronic pain. Other diagnoses that arise from chronic pain are also common. Because comorbidities are so prevalent in this population, other medical specialties must be included in the patient's plan of care (McCoy, 2016).

Reason two has to do with the financial component of chronic pain, as many patients require ongoing therapy for the chronic condition. Chronic pain is costly for patients, medical and psychological organizations, and society, costing billions each year. According to the HHS (2019), many insurance carriers and Medicare and Medicaid Services prefer having one provider as a source of referrals, medications, and treatment

orders. Although patients are often referred out for different services in multidisciplinary clinics, referrals generated within one agency may be more economical, long-term (Hinami et al., 2019). A retrospective cohort study conducted by Hinami et al. (2019) evaluated provider opioid prescribing characteristics to find key traits shared in those who prescribe higher than average amounts of opioids. The researchers concluded that because of the new opioid guidelines and continued deaths from opioids, insurance agencies would require more patients to be managed by multidisciplinary programs (Hinami, 2019).

Synthesized Research Findings Related to Multidisciplinary Theory

Given the multidimensional aspects of chronic pain, single-therapy solutions are not enough to manage the extensive range of symptoms that accompany chronic pain. Multidisciplinary pain programs incorporate psychological therapies, physical therapy, medical treatments, and more. Defined as having three or more treatment types that different healthcare providers deliver, multidisciplinary programs address the patient's biopsychosocial needs (Banerje & Argáez, 2017). A study by Gauthier, Dulong, & Argáez, (2019) inquired about the clinical and cost effectiveness of the multidisciplinary approach and the guidelines of outpatient multidisciplinary programs for noncancer pain. As for cost-effectiveness, the review did not find a significant amount of literature to support the claim (Gauthier, Dulong, & Argáez, 2019).

The results of their literature review found three guidelines related to this type of program and found the outcomes to be modestly effective. The first guideline recommended chronic, non-malignant pain, to be managed from a multidisciplinary

approach (Gauthier, Dulong, & Argáez, 2019). The second and third guidelines focused

on specific chronic pain patients. For instance, the second guideline called for

multidisciplinary programs for patients who had significant challenges due to back pain

(Gauthier, Dulong, & Argáez, 2019). The third guideline recommended a

multidisciplinary approach for opioid treated patients with difficulties tapering from the

drugs (Gauthier, Dulong, & Argáez, 2019).

     Colletti (2019) sought to quantify the impact of a multidisciplinary chronic pain

management program on improving function and lowering opioid doses in chronic pain

patients with the inclusion of occupational therapy in the program. The study included 58

participants in a multidisciplinary pain program. Using a quantitative retrospective

design, the results revealed improved overall functionality and decreased opioid dosage

when occupational therapy (OT) was included in the program. A strength of the research

is that it supports the use of OT in a multidisciplinary pain program where OT is often

overlooked. A limitation of the study is that the participants were limited to fifty-eight; a

larger sample size and longer duration would potentially extend the results over time. The

Colletti results support a multidisciplinary approach to chronic pain management, which

is relative to this research.

     Just as Coletti (2019) found support for multidisciplinary programs for chronic

pain, so did McCoy (2016). McCoy's report addressed a gap by determining if

multidisciplinary programs that use evidence-based treatments show improved quality of

life, anxiety, depression, and pain symptoms. Using de-identified data, paired t-tests

calculated differences in pre and post-test scores from several self-report measures.

Physicians overseeing the program included a pain interventionalist, nurses, physical therapists, nurse practitioners, and other healthcare professionals. An analysis of the results in this study found that evidence-based practices used in multidisciplinary clinics improved quality of life factors and decreased anxiety, depression, and pain scores in chronic pain patients (McCoy, 2016). Recommendations from the study called for heightened multidisciplinary approaches to chronic pain to better the continuum of care for chronic pain patients.

Multidisciplinary Theory as Related to the Research Questions

Pain clinics that base their care on the multidisciplinary model offer their patients a variety of treatments to manage and cope with chronic pain symptoms. These therapies include medication management, interventional procedures, physical therapy, and psychological care. Psychological care integrated into the medical model has a higher success rate than if psychological needs are not addressed (Hinami et al., 2019). As this literature is finding and aligned with research questions one and two, all chronic pain patients must be methodically screened for depression. For research purposes, this aimed to delineate the number of patients screened with the PHQ-9 who are treated with opioids compared to those not treated with opioids. Understanding the differences between sample groups helps guide the research towards better policies and better patient care.

Advanced research that tests for relationships is an integral part of learning how to build better policies and better care for patients with chronic pain. Evaluating PHQ-9 scores between the two sample groups allows for research that meets the gap on how pain clinics decide which patients to generate mental health referrals for (Nichani et al., 2017).

Filling the gap on the use of the PHQ-9 in pain clinics has the potential to support its continued use as an effective way to measure depression in chronic pain patients (Dutta et al., 2013). Moreover, specifically in groups of individuals who are at risk for depression and suicide. Inquiring about a relationship among PHQ-9 scores, opioid-treatment compared to treatment without opioids, and the provision of mental health referrals will transition the research towards best practices for multidisciplinary clinics. Altogether, the research questions in this research may confirm the rationale for a multidisciplinary format for treating chronic pain.

Organization of Literature

The following section describes the overview of literature relating to the factors included in the study. The literature is grouped by topic, beginning with the historical background of pain management, and expounding on the research surrounding depression assessment in pain clinics, the use of the PHQ-9 in pain clinics, mental health referrals from pain providers for opioid-treated patients, opioids, opioid prescribing guidelines, opioid misuse, overdose, and suicide. Key concepts of the literature, along with the fundamental theories and methods, will be defined and reviewed. The results and conclusions of each piece of literature and how it applies to other research in the area of chronic pain will be discussed. How the literature adds to or challenges the established literature will be critiqued. Finally, the strengths and weaknesses of the presented literature will be evaluated.

Historical Review of Pain Management

Pain management strategies are recorded throughout history, from Ancient Cultures to the early Imperial Era, Renaissance Era, the Late Industrial Ages, and today. As far back as 1500-1300 BC, pain that was not a result of a visible injury was thought to be caused by evil spirits or demons (Pain Management Collaboratory, 2020). During this time, cocoa leaves, and opium, along with spiritual ceremonies, were the main treatments for pain. In the early Imperial Era (300 BC), it was believed that it was not the brain that generated pain symptoms; it was the heart. At this time, acupuncture was first reported in a Chinese medical textbook (Pain Management Collaboratory, 2020); other treatments included alcohol and opium (Medić, 2017). Within the Enlightenment or Renaissance (1400-1700), the pain was a sign of life, a belief that

aligned with the Imperial Age where pain, as existential suffering, was only to be transcended through Enlightenment or death (Medić, 2017).

During the Enlightenment and beyond, The Late Industrial Ages (1800-1870) brought a new philosophy to pain and pain management. Medicine viewed pain as a process that could be measured and minimized (Pain Management Collaboratory, 2020). At this time, pharmacological treatments, ether, cocaine, and most notably, morphine, were used. First extracted from opium by German scientist Friedrich Sertürner, morphine was used as an analgesic and an anesthetic (Trickey, 2018). From the 1800's it was realized that pain could be a chronic condition, a very misunderstood condition that often did not have an explanation or known cause. The 19th century saw several breakthroughs with a broader understanding of pain mechanisms and therapeutic innovations.

The breakthroughs from this time were yielded from a physiological approach with research focusing on neurological explanations, pain receptors, for example (Olson, 2015). Stronger microscopes allowed for identifying neural structures that were different from other structures with other functions specific to pain (Goldenberg, 2020). The progression of neurological research and redeveloped treatment approaches in the late 1800s carried over to the 1900s, and clinics dedicated to pain management began to open worldwide. In the 1920's neurosurgery, psychological, and pharmacological interventions became the recommended treatments for pain relief. Neurosurgical options included frontal-temporal craniotomies, rhizotomy, and division of the anterolateral aspect of the spinal column (Sabatowski et al., 2004). Pain management in the 1900s continued to advance with the changing landscape of technology, but unfortunately, the trajectory has not paralleled with other significant medical advances.

Modern Pain Management

Dr. John Bonica is considered the founding father of pain medicine, advanced pain management in the 1950s and beyond. This period generated chronic pain in many patients who emerged with physical and psychological injuries sustained in World War II. He is credited with developing the study of and management of pain as a medical discipline (Sabatowski et al., 2004). Bonica found pain management best addressed from a multidisciplinary approach that incorporated several tenants of medicine and psychology for treatment. Since that time. Bonica's Management of Pain is a resource to which many pain professionals refer to manage chronic pain patients (Bonica, 1953). Now in the fifth edition the writers of the edition have considered Dr. Bonica's methods

and updated them with new treatments and research, including psychological treatments and therapies (Ballantyne et al., 2019).

Throughout the 1950s and 1960s, pain management continued to ebb and flow with a few new ideas at the forefront. More and more pharmacological options became available to patients with more advanced analgesics and other types of pain medications. Non-steroidal anti-inflammatories (NSAIDs) were developed, and benzodiazepines were used not only as anxiolytics but as muscle relaxants (Anderson, 2019). Dame Cicely Saunders led the hospice movement in the 1950s as a multidimensional perspective that recognized pain management from spiritual, physical, psychological, and cultural contexts (Sabatowski et al., 2004). From the 1960s, pain management treatments and research found that psychological and behavioral elements contributed to treatment success. Reports from the 1960s through the 1990's note minor contributions to pain management, with the most advancements in pharmacological therapies.

Knowledge of Chronic Pain as a Condition

Knowledge about pain conditions were advancing as well. Pain was no longer just viewed as a symptom, but rather chronic pain was referred to as a condition. Newer pain conditions such as Fibromyalgia, Chronic Pain Syndrome, Complex Regional Pain Syndrome, and Somatization syndromes were named. They were becoming more frequently diagnosed and studied. Interventional procedures advanced as well. Nerve blocks and ablations used to manage pain since the late 1800s were now used to treat chronic pain. Advancements of these procedures, and others, continued to grow. A pioneer of interventional pain management, methods used to block pain signals, Dr.

Privthi Raj, put forth the idea of interventional pain management in 1986 with his book

Practical Management of Pain, where many of these techniques were described

(Manchikanti et al., 2003).

Interventional Pain Management

Later in 1996, Dr. Steven Waldman became the first to use the term interventional

pain management in his textbook, The Atlas of Interventional Pain Management

(Manchikanti et al., 2003). Since these dates, several interventional procedures have been

introduced for pain management. Many of these methods involve the spine with

injections into the epidural spaces in the spinal column and various types of nerve

innervations that are not limited to the spine. Peripheral techniques such as nerve

stimulation were developed to treat pain outside the central nervous system. Indeed, the

field of pain management has seen rapid growth in procedures and interventions in the

past three decades.

Interventions such as spinal injections are expensive, they take time to reach their

maximum efficacy, and they generally wear off over time and are not always indicated

for all patients due to risk. Along with interventions, the modalities used in pain medicine

have evolved. In a study conducted by Penny et al. (2017), the authors discuss

comparisons of treatments like physical therapy, massage, and Eastern remedies like

acupuncture. They describe the use of these therapies as practical but not without

drawbacks. These treatments can also be expensive and time-consuming and take longer

to produce pain relief. Many of these treatments are not affordable, and insurance carriers

may not pay for them. Physical Therapy is another line of defense, but copays, pain

induced by the therapy, lack of insurance coverage, and the time commitment required for the maximum benefit keep patients from following through.

Pharmacological Pain Management

Throughout the history of pain management, pharmacological treatments have been preferred as they do not require a lot of expense, especially when covered by insurance. They are also easier for patients to use as they are not met with time commitments or physical strain. Still, pharmacological breakthroughs have been minor in that they are short-lived strategies that can have detrimental effects. Adverse side effects such as nausea, vomiting, hyperalgesia, and limitations to who can take the medications are common. For example, people with digestive issues, as a rule, cannot take NSAIDs. Misuse of drugs is also problematic, and it would be remiss not to mention the opioid epidemic in this literature review, as the impact of these drugs has been significant since the 1990s. Opioids have not only helped many people living with chronic pain, but they have also claimed many lives through misuse, abuse, accidental overdose, and suicide.

Chronic Pain

Definition

From the literature, it is apparent that there are differing opinions on the definition of pain and levels of pain, specifically, the difference between acute versus chronic pain. Additionally, the terminology used to describe the sensation of pain, degrees of pain, and pain quality, vary. The reasons for these differences may partly be a result of pain's subjectiveness, yet there are objective findings that suggest the mechanisms involved in the pathogenesis of pain are neurologically prevalent (Dinakar & Stillman, 2016). Even

when using a self-report measure such as the PHQ-9, where the questions and answers may be open to individual interpretation, it is imperative to have a foundation of agreed understanding. Therefore, this review section describes the literature and provides a framework of standard definitions. Providing these definitions allows the reader a clarification of the vocabulary used for this study.

Acute Pain Versus Chronic Pain

The CDC and the Mayo Clinic agree that acute pain occurs suddenly, typically emerging from a known cause (CDC, 2021; Mayo Clinic, 2016). Acute pain lasts less than three months and is prompted by tissue, muscular, or nerve damage because of an injury, illness, or medical procedure such as a surgery that disturbs homeostasis. Once healing has ensued and homeostasis is restored, the likelihood of continued pain is low. Chronic pain, on the other hand, is classified by multiple agencies, notably the International Association for the Study of Pain (IASP), as pain that may or may not present with a known cause and is present for three or more months (Treede et al., 2019). The IASP, in cooperation with the World Health Organization, developed a classification system of codes for health conditions known as the International Classification of Diseases (ICD). These codes are used for billing, documentation, diagnosing, statistical grouping, and international awareness (World Health Organization, 2021).

From the Cleveland Clinic (2017) comes a general definition of pain as an unpleasant or uncomfortable feeling. While the definition could be left up to interpretation, Cleveland Clinic describes the difference between acute and chronic pain as the intensity and length of the unpleasantness or discomfort. Acute pain lasts less than

four to six months, is sharp, and is generated by an underlying source; it dissipates as the cause for the pain diminishes (Cleveland Clinic, 2017). The Cleveland Clinic defines chronic pain as ongoing pain that lasts more than four to six months from a known or unknown cause and where pain signals remain active for an unknown amount of time (Cleveland Clinic, 2017).   This definition is different from the previously noted Mayo Clinic and the IASP. However, it aligns with the Institute of Clinical Systems Improvement (2017) that notes chronic pain as a condition that lasts beyond twelve weeks and includes emotional characteristics such as anxiety and depression. Regarding this study, the definition of chronic pain will meet with the agreement that pain is present for more than three months, is prompted from an apparent or unapparent prompt, and is severe enough to disrupt daily activities and the typical structure of an individual's life.

Although there are many chronic pain conditions, the International Classification of Diseases codes refers to chronic pain under the IASP's definition of lasting three or more months (World Health Organization, 2021). Many sources widely recognize chronic pain as suffering accompanied by distress that interferes with daily functioning and the ability to perform routine daily tasks. Even with a standardized set of codes and a consensus of what classifies as chronic pain, a lack of systematic representation remains. Andraka-Christou et al. (2018) developed a taxonomy of definitions in their systematic review of how medical literature defines chronic pain and pain clinics used for this study. The authors also measured to what extent the definitions were reflected in state laws regarding pain clinics to standardize laws and policies within these clinics. This new definition, pain that lasts more than three months, includes the emotional implications of

chronic pain with the physical as the unpleasant association of perceived experience of actual or possibility of tissue damage (Malik, 2020).

Types of Chronic Pain Conditions

With the IASP's definition of chronic pain established, this literature review now describes the type of conditions associated with chronic pain. As explained, many types of conditions arise from pain that persists for more than three months. Chronic pain is exclusively recognized as a condition in the International Classification of Diseases-11th Edition and is used by primary care providers, pain providers, and other medical specialties (World Health Organization, 2021). One such specialty to note is Oncology, where pain presents because of cancer. There is an ongoing debate on whether cancer and noncancer pain should be treated with the same measures, including pharmaceutical agents (Fishman et al., 2010). Indeed, it has been found that practitioners are more stringent with their prescribing practices for patients who are diagnosed with noncancer chronic pain than those with a cancer diagnosis (Bhattacharjee, 2020).

Raffaeli & Arnaudo (2017) debate that pain symptoms become a disease when taken as a cluster. The basis for their research is the lack of recognition of pain as a singular disease process despite the global impact of chronic pain as an epidemic. Their findings cite that from 2006-2014 it is estimated that approximately 10% of the world's population, including 20% of the American population and 19% of all Europeans, suffered from chronic pain (Raffaeli & Arnaudo, 2017). The research is strengthened by previous studies that named chronic pain as a disease with its own pathology, symptoms, processes, and signs and named it the disease of the 21st century. Identifying chronic pain

as a disease separates pain as a symptom and allows it to be considered a scientific matter that encourages research. Scientific research from this angle can impart more effective treatment strategies that focus on pain control, adaption to pain, and coping mechanisms for persistent pain.

An analysis conducted by Dahlhamer et al. (2020) agrees that chronic pain is a component of many chronic conditions that negatively impact the individuals living with the condition and their families and society. The authors of this review addressed the 2016 National Pain Strategy, calling for more accurate approximations of the incidence of high-impact chronic pain. High-impact chronic pain is a subgroup that is defined as pain that is present for more than three months and interferes with more than one limitation of activities (Dahlhamer et al., 2020). To determine the approximation, the CDC studied data from the National Health Interview Survey in 2016 and found that not only were 20.4% of United States adults living with chronic pain, but eight percent lived with high-impact chronic pain. The prevalence of high-impact chronic pain was much more significant than previously believed. They also found that high-impact chronic pain was more prevalent in women, aging adults, and people with lower socioeconomic status.

Still another construct of chronic pain is central sensitization, a type of widespread pain amplified by the central nervous system (CNS). Central sensitization occurs even after an injury has healed when the CNS becomes highly reactive, and the pain persists (Harte, Harris, & Clauw, 2018). This condition has two distinct characteristics; allodynia, where an individual is very sensitive to touch, and hyperalgesia, where the pain threshold is much lower and pain is felt more severely. The

condition is described in a review of literature by Harte et al. (2018), where several

theories suggest that understanding central sensitization is critical to treating conditions

such as fibromyalgia. Within this category are two additional subcategories; one demarks

the phenomenon as bottom-up and top-down. In the subcategory of a bottom-up

approach, the pain persists due to input generated by nociceptive signals and the top-up

by the CNS (Harte et al., 2018).

To understand pain as a disease, it is crucial to understand that many conditions

can directly or indirectly lead to chronic pain. It is also essential to recognize that pain is

a phenomenon that may occur without an apparent cause and can be exacerbated by both

physical and psychological stimuli. As described by Harte et al. (2018), different

pathways and mechanisms of action involved with chronic pain influence pain perception

in relation to pain quality and severity. One such pathway well-known in the medical

sciences is neuropathic pain, where nerve endings pick up a pain signal and transmit it to

the brain via neurotransmitters. In their literature review, Harte et al. (2018) describe

another less known pathway outside the pain community as nociceptive pain.

Nociception is a pathway that when tissue damage occurs and a noxious signal is

prompted, nociceptors carry the signal through the peripheral and central nervous systems

to the brain, where the sensation of pain is felt (Harte, 2018).

Many conditions are related to chronic pain, with some conditions as the catalyst

of chronic pain and others a consequence of the pain condition. Stemming from an injury

or illness, it is well established and supported by empirical evidence that chronic pain is a

significant drain on finances and quality of life. Determined by science as pain that goes

beyond normal limits and lasts beyond 3-6 months, chronic pain is a condition that has many characteristics. There are a variety of subcategories of chronic pain. In the reviews and studies analyzed in this chapter, chronic pain may be widespread and include peripheral drivers or contained in the CNS. Regardless, the high prevalence of these conditions is prompt enough for more research to understand the implications of and treatment of chronic pain.

Pain Clinics

A pain clinic is a clinic that specializes in the management of chronic pain conditions. It is comprised of an individual or, most often, a group of individuals who work with patients to decrease the incidence and severity of chronic pain through a variety of methods. Some pain clinics include a concentration on finding the root cause of chronic pain, and other pain clinics focus on the management of chronic pain conditions. Some pain clinics offer only pharmacological treatments, while others offer multiple modalities (Zani & Zin, 2020). Common treatments found in pain management clinics are pharmacological treatments, interventional treatments, multidisciplinary treatments, and surgical procedures (Rayner et al., 2016). Many chronic pain patients are referred to a specialized pain clinic after other treatments and specialties are exhausted.

Opioids

Opioids are a group of natural and synthetic controlled substances originating from the poppy plant. Some derivatives like heroin, one of the most well-known opioids, are illegal because of their high potential for addiction and death. Opioids used in controlled situations for medicinal purposes are prescribed for the management of pain or

as an anesthetic. They work by attaching to opioid receptors in the brain and releasing neurotransmitters that subdue or block pain signals. Also known as pain killers, opioids are among the most prescribed medications globally, including morphine, oxycontin, oxycodone, and fentanyl (National Institute of Drug Abuse, 2021). They have become a controversial therapy because of their addictiveness and danger when taken inappropriately or misused.

When used for the short term, opioids can effectively manage acute pain, such as after a surgery or injury. Outside of addiction, opioids pose significant risks, the side effects of which can be deadly. Common side effects include sedation, constipation, lowered testosterone levels, decreased hearing, and nausea which are typically not life-threatening. Life-threatening reactions include shallow breathing, decreased heart rate, loss of consciousness, and death (Krieger, 2018). Another downside of opioid use is the withdrawal symptoms that can occur after a short period of use. Withdrawal symptoms can be incredibly uncomfortable and present as bouts of jitteriness, gastrointestinal upset, and anxiousness, all of which are usually non-life-threatening.

Opioid Epidemic

In the 1990's pain management took a dramatic downward turn when new, synthetic opioids were introduced. When the new opioids were put on the market, pharmaceutical companies reassured the medical community that they were not addictive (U.S. Department of Health and Human Services 2021). Many prescriptions were written because of these claims, and the medications were dispensed to the public (U.S. Department of Health and Human Services, 2021). With the number of prescriptions and

opioid medications being distributed, healthcare workers noticed an alarming number of people becoming dependent and addicted to the medications, which led to the misuse and abuse of the new opioids. Overdose deaths, both accidental and suicide, also rose dramatically during this time. Wonder, a site managed by the CDC to analyze public health data, reports that since 1999, over 841,000 people in the United States have died from drug overdoses, with opioid deaths increasing almost yearly (Wonder, 2021). In 2019 alone, 49,860 individuals died from an overdose involving an opioid.

The United States has made a pact to reduce the amount of opioid death by creating agencies dedicated to opioid prescribing and use. One such task force is The Pain Management Best Practices Inter-Agency Task Force (2016) that works under the supervision of the U.S. Department of Veterans Affairs and the U.S. Department of Defense. The task force consisted of government officials, statisticians, medical professionals, and members of the public. Also, in 2016, the CDC put together a group that produced guidelines for primary care providers that has carried over to medical specialties that frequently prescribe opioids, for example, orthopedics and pain management. These guidelines are set forth to address the initiation and continued use of opioids, provide suggestions on what type of opioids to use, and safe dosing practices (Dowell et al., 2016). Now, more than four years later, these agencies continue to update their recommendations.

Pharmaceutical treatments, including opioids, play a role in managing pain symptoms, but they come with significant risks. There is always a risk of allergic or adverse reactions with all drugs. Tying into the physical aspects, pharmacological

treatments may cause side-effects, such as somnolence and gastrointestinal issues that interfere with the patient's ability to work, maintain their environment, and socialize. Psychological function may also be affected; memory lapses, slowed processing speed and delayed critical thinking skills may pose considerable challenges. Associated with the physical and psychological domains are existential concerns where meaning and purpose are questioned. Considering the impact of these biopsychosocial factors, it is essential for providers who prescribe opioids to consider multidisciplinary measures that include psychological interventions for the care plan.

Opioid Prescribing Guidelines

From the federal standpoint, there are recommendations for prescribing opioids, but mostly the individual states set their own laws and policies on opioids in the United States. As the risks of opioids became more well-known, policies changed, and so did the perception of opioids within the medical field and the public (Al Achkar, Revere, 2017). Where once these medications were viewed as a medical breakthrough, now came stigma. Today, the people who use them and the providers who prescribe them face uninformed judgment. Additionally, patients who were once accustomed to taking higher doses now had to decrease the amount of medication to stay within the best practices and guidelines. The changes within the medical profession were substantial as more and more patients were referred out to clinics and programs that specialized in pain management. Patients began to feel brushed aside and stigmatized with the new challenges (Penney et al., 2017).

Prompted by the misuse and abuse of prescription opioids, a qualitative study in Indiana evaluated pain patients' experiences after new opioid prescribing laws were legislated. Participants were patients recruited from a dedicated pain clinic and providers from a primary care setting (Al Achkar, Revere, 2017). The thematic analysis revealed that the new prescribing rules significantly interferes with the ease in which patients are able to obtain the medications from pharmacies, on multiple levels. The same was true for the providers who faced new challenges within the therapeutic relationship. A strength of the study was that it pinpointed patients from a pain clinic whose lives were directly impacted by the new dose and therapy requirements. Targeting only primary care providers limited the research and including specialists who frequently prescribe opioids will not only expand on the knowledge but open the door for additional research.

An overarching theme of the opioid epidemic is the overprescribing of opioids that began in the 1990s. Meisenberg et al. (2018) conducted a quality improvement study to quantify targeted interventions on opioid prescribing in a healthcare system to evaluate if the measures reduced the number of opioid prescriptions. The interventions focused on were providing opioid education to patients, measurements to avoid oversight, regulated postoperative protocols, and prescriber accountability and education (Meisenberg et al., 2018). Over a million clinical encounters were compared within a pre- and post-intervention period across multiple specialties. The study results indicated a statistically significant reduction in postintervention opioid prescribing, with a considerable reduction in morphine milliequivalent per prescription and encounter (Meisenberg et al., 2018).

This study supports the author's claim that healthcare systems must reduce opioid prescriptions but does not consider a broader base of organizations.

Depression and Chronic Pain

As noted throughout this study and widely reported in clinical studies is the association between chronic pain and depression. The two conditions are often a comorbidity of the other, and when they do coexist, the symptoms and severity of both increases. Although the association is still unclear, a large amount of research finds psychological, physical, and neurological overlaps that may begin to explain the link (Sheng et al., 2017). Alone, the incidence of depression and chronic pain is staggering, with depression as the leading psychological disorder and chronic pain the leading complaint in medical offices worldwide. These conditions are highly debilitating; they lead the numbers of all disability claims in the United States, and the financial burden to healthcare is in the billions (Ahmedani et al., 2015). The emotional cost to individuals afflicted with one or the other or both is incalculable. For these reasons, research on the prevalence of depression screening and the number of mental health referrals in opioid-treated patients is needed.

Research estimates that depression and chronic pain comorbidity is between 30% and 50%. (Sternke et al., 2016). With one-third to one-half of all chronic pain patients suffering from depression, a significant concern is that not all patients with chronic pain are actively screened for depression. Further research posits that when patients are screened, they may not be receiving referrals for mental health services (Hong et al., 2018). This is concerning given that numerous studies find that when treated early, the

positive outcome of treatment for depression is significantly greater than for those who do not receive treatment (Sternke et al., 2016). With an average of eight years between the onset of and treatment for depression, it is critical that patients with chronic pain are regularly screened for this condition. Equally concerning, additional research finds that the incidence of depression is even higher in individuals treated with opioids for chronic pain (Tolomeo et al., 2019).

Arango-Davila & Rincon-Hoyos (2018) provide a comprehensive narrative review that draws on the pathophysiological and clinical relationship between depression, anxiety, and chronic pain. Coming from a pathophysiological, neurophysiological, biochemical, and cellular view, the narrative review offers a deeper understanding of the comorbidity of chronic pain, anxiety, and depression and how these conditions contribute to the effective management of pain (Arango-Davila & Rincon-Hoyos, 2018). In the same vein, Tolomeo et al. (2019) used neuropsychological testing to find that patients treated with methadone and buprenorphine for chronic conditions were at risk for visuospatial and cognitive decline associated with anxiety and depression (Byers et al., 2016). The literature is robust with information on how biopsychosocial factors contribute to and predict the amplification of pain symptoms, hyperalgesia, and worsening depression, in individuals with chronic pain. As Boone & Kim (2019) describe in their quantitative study, family strain amplifies pain severity. This may partly be due to dramatic shifts in income, roles, existential concerns, and abilities that Piardi et al. (2020) relate to hyperalgesia, which social stressors can bring on.

Past and current research shows that depression and pain affect each other dramatically; when one condition becomes more acute, so does the other. Strain on interpersonal relationships and stress are common complaints in both conditions, with current and past research finding the correlation between exacerbation of depression and amplification of pain severity, reciprocal.

Piardi et al. (2020) describe social defeat stress as a precursor for increased pain and stress-induced depression. Their research applies to this study as the findings are consistent with stress being a factor of depression and chronic pain. Although the duration of the Piardi et al. research is short, spanning just ten days of induced stress, the findings suggest that the stress of both disorders coincides with the severity of symptoms. This information also relates to the research because opioid pain medications can manage chronic pain, and patients who are prescribed opioids have an even higher tendency for depression than those who are not prescribed opioids.

Countless studies point out that opioids are effective for treating pain conditions even though some medical professionals argue that the benefits to cost ratio of the use of opioids is great (Wang, 2016). Opioids, biologically, can cause depression; they are naturally central nervous system depressants and share many of the same neural processing mechanisms and neural pathways (Hooten, 2016). The question of cause and effect, however, remains. Does chronic pain cause depression, and can depression worsen chronic pain, are questions asked by many researchers, and as of this writing, there is no clear answer. What is known is that when an opioid is brought into the mix, depression is more likely to manifest, and chronic pain can worsen with a condition called hyperalgesia

(Piardi et al., 2020). Whereas opioids reduce pain by attaching to opioid receptors, hyperalgesia is a paradoxical reaction that occurs when the nervous system becomes hyperactive, and pain becomes more severe due to prolonged opioid use (Ballantyne et al., 2019).

Emerging evidence on the comorbidity of depression and chronic pain finds that opioids are more likely to be prescribed for chronic pain patients who suffer from depression (Feingold et al., 2018). These patients are also more likely to be prescribed opioids in higher doses and for more extended periods. The statistical analysis by Feingold et al. describes 56.3% of the participants as positive for depression based on PHQ-9 scores. All participants were diagnosed with a chronic pain condition, and all were regularly prescribed opioids. As the aim of the study, the findings were consistent with a positive association between opioid misuse, chronic pain, and depression, but additional information was provided as well. With the use of the PHQ-9, the Generalized Anxiety Disorder (GAD) questionnaire, and clinical interviews, 80% of all patients screened, were positive for depression (Feingold et al., 2018).

Assessment and Screening

Documentation on the association of chronic pain and depression is substantial, yet there is a considerable gap in the literature on how pain clinics screen for depression in chronic pain patients. One such gap derives from lack of research on the screening of chronic pain patients, especially between opioid-treated and nonopioid-treated patients. As noted in Feingold et al., (2018), opioid-treated patients trend higher for depression than chronic pain patients who do not use opioids. The authors compared the prevalence

of opioid misuse among chronic pain patients using an adjusted odds ratio in their study. Depression was factored into the study, with more than 80% of the participants scoring positive for depression on the PHQ-9 (Feingold et al., 2018). The results found a statistical significance that patients who screened positive for depression were at increased odds for opioid misuse.

Given that opioid-treated patients also have a higher incidence of suicide, it is crucial to fill the gap. However, another gap is the lack of attention to depression screening in dedicated pain clinics. While it has been found that primary care clinics are screening all patients for depression, research concentrating on dedicated pain clinics is nil (Beebe & Utley, 2018). Given that two-thirds of patients who screened positive for depression in the primary care setting were chronic pain patients, it is more than likely that there would be a similar outcome in clinics that specialized in treating chronic pain. Moreover, the findings from the Beebe and Utley study (2018) pertain to this study because they used the PHQ-9 to screen chronic pain patients for depression. This further supports the findings of Beebe & Utley (2018), where a relationship between depression and chronic pain was evident.

Depression screening in chronic pain patients is a topic of interest among several agencies, including the CDC, The Pain Management Best Practices Inter-Agency Task Force, and the National Institute of Health. These agencies are interested in the psychological component of chronic pain because of the physical, emotional, and financial toll that chronic pain takes on individuals and those that care for them. There is also the opioid epidemic to consider; much of the research relates the use of opioids and

chronic pain to depression, overdose, and suicide. The detrimental effects of the opioid epidemic are not contained within the chronic pain community. However, there is evidence that chronic pain patients treated with opioids are more likely to misuse opioids, accidentally overdose on opioids, and die from suicide (Bryan et al., 2017).

Bryan et al. (2017) analyzed a group of chronic pain patients using a shortened version of the Suicide Cognitions Scale (SCS-s). Although the study's goal was to test the efficacy of the scale, the research is relevant to this study because of the research and findings. Participants were recruited from three types of outpatient clinics, pain medicine, orofacial pain, and clinical health psychology (Bryan et al., 2017). Commonalities found among the participants were the comorbidity of depression, feelings of burdensomeness, and the feeling of being unlovable (Bryan et al., 2017). Confirmatory factor analysis, multivariate regression, and graded item response theory model comprised the analysis. One key finding in the analysis correlated early assessment and depression with decreased suicidal ideation, attempts, and death (Bryan et al., 2017)

The previous study notes the importance of early detection of depression in chronic pain patients, but what other research does not inform is if pain clinics are screening for depression. There is also a lack of guidance on what tools to use to conduct the screening. Given that opioid-treated chronic pain patients are at a high risk of depression and suicide, a study that includes these elements is reasonable. Researching the number of pain clinics that screen both opioid and non-opioid treated patients may ultimately benefit the opioid epidemic by showing how prevalent depression and suicide are among chronic pain patients who use opioids for pain management (Kosson et al.,

2018). There is also the question of patients who are assessed and screened positive for depression if they are offered referrals for mental health evaluation and treatment. Additionally, given that an increasing number of opioid-treated patients are being referred to pain clinics, it is reasonable to infer that this is an appropriate population to assess.

Kosson et al. (2018) conducted a study in two separate pain clinics to measure the frequency of emotional disturbances in patients with chronic pain. Specifically, depression, aggression, and anxiety were assessed. The reason for the study was to identify factors relating to the frequency of emotional complaints in patients with chronic pain (Kosson et al., 2018). The study was prompted by the amount of pain-related mental changes that were observed in chronic pain patients and the significant limitations the changes had on quality of life. Out of all the participants in the study, 17.85% screened positive for depression on the Hospital Anxiety and Depression Scale-Modified (HADS-M). From the regression analysis, the three features related to depression that showed statistical significance were gender, the time of being treated in the pain clinic, and pain severity (Kosson et al., 2018).

Nearly all the literature informs professionals on the need for accurate and regular depression screening. For instance, the 2020 American Psychological Association Task Force addresses this need in the Psychological Assessment and Evaluation Guidelines with mention of how the discipline of psychology has branched into other settings and populations such as with healthcare (American Psychological Association, 2020). These guidelines were implemented because of deficits found in previous editions of the

Psychological Assessments and Evaluation Guidelines. Currently, the Guidelines stress the integration of more specified instruments in higher standards of evaluation in the expanding role of psychology in healthcare settings (American Psychological Association, 2020). Many chronic pain centers offer psychological services for their patients; some clinics even require a psychological evaluation every one to two years as part of the program (American Psychological Association, 2020). There are pain clinics that screen every patient for depression at every office visit, while others choose to screen every six months to a year.

Patient Health Questionnaire-9 (PHQ-9)

The Patient Health Questionnaire-9 scale was chosen for this research for several reasons, most notably because of its length, ease of use, and consistent reliability and validity. Many psychiatric, primary, and specialty clinics utilize the PHQ-9 to assess patients prior to an appointment so that depressive symptoms can be addressed as soon as possible. Literature to support its use is abundant, as noted in this literature review. Another point of consideration is the ease of scoring of the tool. It takes moments to calculate the numbers, with higher numbers representing the severity of symptoms. Additionally, the PHQ-9 is appropriate for chronic conditions such as chronic pain.

Pain clinics may be able to initiate care for individuals who are struggling with chronic pain and depression with regular depression screening. By using reliable and valid screening tools, dedicated pain clinics may be able to mitigate or decrease the prevalence of depression, addiction, or suicide, in their patients. The Patient Health Questionnaire-9 is one such tool proven by science to be effective at measuring

depression symptoms in people offered in healthcare settings. The authors, Spitzer, Williams, and Kroenke, began designing the new, nine-question tool in the 1990s from the more extensive Patient Health Questionnaire that assesses eight criteria-based diagnoses in the DSM-IV (Kroenke et al., 2001). Nine questions related to the criteria of a depressive disorder are included in the assessment to identify depression symptoms and grade the severity of the symptoms (Kroenke et al., 2001). Initially tested in primary care, the PHQ-9 is now widely used in mental health and medical settings, notably in areas of chronic illness.

The performance of the PHQ-9 has remained consistent since its inception and is considered one of the most reliable tools to screen for depression. In a recent systemic review, Costantini et al. (2021) selected forty-two studies between 1995-2018 from primary care clinics with adult populations. Of the forty-two studies, thirty-one examined the PHQ-9 for accuracy in a two-stage process, the PHQ-9 as one stage, and structured interviews the other. The sensitivity of the PHQ-9 ranged from 0.37 to 0.98, specificity 0.42 to 0.99 (Costantini et al., 2021). A positive predictive value from 0.09 to 0.92 was noted, along with a negative predictive value from 0.8 to 1 (Costantini et al., 2021). Overall, the review results assert that when used with structured interviews, the PHQ-9 is an accurate tool.

An individual participant meta-analysis conducted by Levis et al. (2019) set out to determine the accuracy of the PHQ-9 for screening of major depression. From fifty-eight studies, the authors tested the PHQ-9 against diagnostic interviews in diagnosing depression, and bivariate random-effects meta-analysis was used to determine the

sensitivity of the interviews and the PHQ-9 (2019). The meta-regression results found the

PHQ-9 to be more sensitive than validated diagnostic interviews, especially in older

patients compared to younger patients (Levis et al., 2019). This study includes large

sample size and examines subgroups across mental health and medical domains,

strengthening the analysis. A potential weakness of the study was noted to be the lack of

comorbidity inclusion. Given the results of this meta-analysis and the prevalence of

depression, the PHQ-9 is a proven tool to measure the presence of and severity of

depression.

Both the PHQ-9 and the Global Pain Scale (GPS) are established measures

respectively and are often used in conjunction to screen patients with chronic pain.

Similar to the above study, Nolan (2018) evaluated the use of the PHQ-9 with the Global

Pain Scale to determine the efficacy of the combined scales. More specifically, Nolan

targeted opioid-dependent adults using a descriptive study with a retrospective correlation

design (Nolan, 2018). A statistically significant relationship ($p = <0.05$) between the

efficacy of the PHQ-9 and the GPS was identified through statistical analysis. Taken

from de-identified records of patients in an opioid analgesic clinic, the data relates to the

present study with support for the use of the PHQ-9. Furthermore, these positive results

may show that the use of the PHQ-9 may increase depression screening and improve

scores.

Still, another study assessed the reliability and validity of the PHQ-9 in patients

with major depressive disorder in psychiatric hospitals. Sun et al. (2020) analyzed

criterion and construct for validity, and the internal concordance coefficient and test-

retest correlation coefficients were used for reliability. Pearson's correlation coefficient was used for correlation between score results. The outcome of the research revealed that the PHQ-9 was consistent compared to the Hamilton Depression Scale (HAMD-7) (Kappa = 0.229, P < 0.001). Factor analysis found strong construct validity. In all, the PHQ-9 proved to be a reliable tool to use in the screening for depression severity (Sun et al., 2020).

The basic assumption is that there is a relationship that pain centers are taking into account the prevalence of depression in their opioid-treated patients and using the PHQ-9 to screen their patients for depression. The other assumption assumes that a referral for psychological services is provided when the patient scores in the moderate to severe range on the PHQ-9. Relevant to this study's assumptions is the research of Beebe & Utley (2018), which holds that using the PHQ-9 in primary care settings facilitated conversations and earlier treatment for depression in patients with chronic pain. When depression is detected and treated early, suicide and suicide-related behaviors decrease in individuals with chronic pain (Bryan et al., 2017).

Kosson et al. (2018) further the research on how pain clinics assess patients for depression and other factors such as aggression and anxiety. Nolan (2018) supports the effectiveness of the PHQ-9 for measuring depression scores of opioid-treated chronic pain patients that, in turn, builds on the importance of pain providers initiating mental health referrals for chronic pain patients. The American Psychological Association (2020) supports the claims of reliability and validity of the PHQ-9 as a tool for use in a wide range of settings, including primary care, obstetrics, and pain management that

follow the Diagnostic and Statistical criteria Manual-IV (DSM-IV). This study goes beyond what is clearly known as a link between chronic pain and depression to measure the degree to which PHQ-9 scores and mental health referrals for chronic pain patients treated with opioids are associated.

Because the overlap between chronic pain and depression is significant and the PHQ-9 consistently proves to be a reliable measure, it is a more than appropriate tool to screen chronic pain patients for depression. Furthermore, the existing evidence supports the use of the PHQ-9 for chronic conditions in a diverse array of settings such as in pain clinics, in languages other than English, and with Veterans (Poleshuck et al., 2010). Research also validates the use of the PHQ-9 in different chronic pain conditions, including pelvic pain, interstitial cystitis, osteoarthritis, and widespread musculoskeletal pain (Poleshuck,et al., 2010). Poleshuck et al. (2010) hypothesized in their study that depression is underestimated in patients with chronic pain and should be assessed and monitored more often. The authors compared the PHQ-9 to other depression measures and confirmed the convergent validity of the PHQ-9 in patients with chronic pain. An important note that correlates this study with others is how depression negatively impacts pain symptoms as pain symptoms adversely impact depression symptoms (Poleshuck et al., 2010). Still another benefit of the PHQ-9 that the authors found is that the PHQ-9 does not pose a risk of overestimating depression symptoms.

Psychological Interventions in Chronic Pain Management

Need for Psychological Intervention in Chronic Pain Management

Arguably, the presence of chronic pain constitutes a need for psychological interventions because of the ramifications it has for individuals, their loved ones, medical and psychological professionals, and society (Balon, 2018). The need for interventions intensifies when depression is present. As previously described in this literature review is the prevalence and impact of depression in chronic pain patients, especially in those treated with opioids. The high risk of opioid use goes beyond addiction and misuse and may challenge the effectiveness of treatment strategies and the cohesiveness of the therapeutic alliance. The implications of chronic pain, depression, and the use of opioids are reasons enough for psychological interventions as outlined here. This section provides a deeper analysis of how depression and opioids impact neurological mechanisms, cognitive function, and psychological status and explains specific modalities proven to improve treatment outcomes.

Types of Psychological Interventions for Chronic Pain

A growing body of research validates the use of psychological interventions in treating chronic pain. Empirical evidence has demonstrated cognitive and behavioral techniques that reduce pain and suffering in many chronic pain conditions. Behavioral interventions such as pacing of activities and biofeedback are known techniques used to manage chronic pain (Sexton-Radek & Chami, 2013). Cognitive-behavioral therapy (CBT) is another adjunct therapy that reframes cognitive distortions associated with chronic pain (Åkerblom et al., 2021; Bushey et al., 2021). Existential therapy, concerned

with ontological and ontic inquiry, explores the human condition with a nuanced search for meaning. This focus encourages a non-judgmental examination of how the patient constructs their view of themselves, others, and their place in life (McCormack & Chalder, 2018).

In their analysis, Åkerblom et al. (2021) conducted a mixed-method cross-sectional and relational study evaluating the relationship between pain, beliefs, and psychological well-being. A first goal of this study was to assess pre-treatment psychological factors in individuals with chronic pain involved in group-based cognitive-behavioral therapy (CBT). A second aim was to assess whether change scores predicted outcomes of cognitive-behavioral therapy. The results showed that group-based CBT was appropriate for the management of depression and can also be used to manage the physical symptoms of chronic pain (Åkerblom et al., 2021). A similar piece of research assessed the effectiveness of individual cognitive behavioral therapy as a call to address the push for pain providers to incorporate non-opioid therapies into their treatment plans. As seen in their Care Management for the Effective Use of Opioids (CAMEO) model, the authors also noted considerable improvement of depression and pain symptoms in their chronic pain patients treated with opioids (Bushey et al., 2021).

Hruschak and Cochran (2017) used systems theory and ecological perspective, combined with the diathesis-stress model, for a framework in which to understand the comorbidity of chronic pain and depression more fully. They conceptualized that adding social work and psychological therapy to the pain management plan could improve the symptoms of depression and chronic pain in individuals (Hruschak & Cochran, 2017).

Expanding on the literature, Byers et al., (2016) examined the role of pain catastrophizing, cognitive, and somatic pre-sleep arousal, in predicting insomnia. They estimated that between 53-88% of all patients living with chronic pain report insomnia symptoms (Byers et al., 2016). In their report, the authors discussed the role of insomnia on pain severity, cognitive functioning, mood, and overall functioning. Results from their work found that disturbances in sleep are often associated with declines in cognitive functioning with delayed information processing and reduced cognitive arousal that may lead to maladaptive coping skills and emotional distress (Byers et al., 2016).

Chronic Pain and Depression

Neurological Components of Pain and Depression

The continued discussion on how chronic pain and depression transform shared neurological mechanisms is grounded in the literature even further. Recent studies have found overlaps in chronic pain and depression in the form of changes in neuroplasticity and neurobiological mechanisms (Sheng et al., 2017). Maladaptive plasticity changes lead to mood dysregulation and pain signals that increase pain symptoms and severity (Kummer et al., 2020). In a series of lectures on neuroscience, Dr. Wang (2019) relates activity in several neural structures in patients with chronic pain and depression, respectively. These structures include the insular cortex, the prefrontal cortex, anterior cingulate, thalamus, hippocampus, and amygdala. Pain and depression also produce and release some of the same neurotransmitters that bind to shared receptors (Hooten, 2016).

Biopsychosocial Stressors and Chronic Pain and Depression

Added to the growing research is an exploration of the relationship between biopsychosocial stressors and the efficacy of early psychological interventions on the chronicity of pain. For instance, Bérubé et al. (2017) recognized that biological, psychological, and social factors influenced the transition from acute to chronic pain. This systematic review suggests that psychoeducation, stress-reduction, mindfulness, and cognitive-behavioral therapies decreased the incidence of chronicity (Bérubé et al., 2017). As a piece of the biopsychosocial mix, it is well documented that patients with chronic pain will either already have symptoms of depression or develop it due to the pain or medications used to treat pain. For this reason, it is imperative that pain management and other specialties that treat chronic pain conditions include psychological assessment and treatment options for this high-risk population.

An empirical parallel between chronic pain and depression is undeniable and chronicled in the literature. Still, it is unclear if chronic pain can cause depression or if depression causes individuals to be more susceptible to pain. Biopsychosocial elements are noted in the research as contributing factors to depression, pain severity, and pain chronicity (Bérubé et al., 2017). Even in studies that identify overlaps and shared neurobiology, a gap remains (Kummer et al., 2020). Understanding the association could clarify the tenants of medicine and psychology on how to most effectively both conditions. Additionally, preventative measures, research, and education could emphasize the importance of considering psychological interventions in chronic pain management.

Depression and Opioids

In a review of the literature, chronic pain patients who are prescribed opioids are more likely to experience depression than those patients who are not treated with opioids. Misuse of opioids is another urgent concern, as many chronic pain patients misuse the medications out of desperation for pain relief or because of addiction. Opioid misuse is a current factor as it is more common in patients with chronic pain and depression. Chronic pain patients who are treated with opioids are also more likely to overdose on the medications. Regardless of if the overdose was unintentional or intentional, overdose occurs with opioid naivety, untreated depression, or undertreated chronic pain. Furthermore, individuals with depression and chronic pain are among the highest population to die from suicide (Bohnert et al., 2018).

Chronic Pain, Depression, and Suicide

Suicide is among the leading causes of death in chronic pain patients treated with opioids (Braden et al., 2017). According to the National Violent Death Reporting System, death by suicide involving opioids is the second leading cause of death (Petrosky et al., 2018). A highly referenced study by Petrosky et al. (2018) describes two potential hypotheses on the link between opioids, pain, and suicide. The first hypothesis asserts that chronic pain patients have access to more opioids and higher doses of opioids (Petrosky et al., 2018). The second suggests that opioids reduce physical and psychological suffering, and when opioid doses are reduced, or the medications discontinued, the risk of suicide is greater (Petrosky et al., 2018). The results of the study

offer that opioids are present in 50% of all suicide decedents with chronic pain (Ilgen 2018).

The numbers of suicides in patients with chronic pain have increased over time, with the most significant rise in the late 1990s to the present. The increase is attributed to misinformation about potential side effects from opioids developed at that time, including depression and addiction (Petrosky et al., 2018). There is also evidence that these numbers may be underestimated, as there may be some people with undiagnosed chronic pain at the time of death or if the death is thought to be an accidental overdose (Ilgen, 2018). Given that the United States is currently in the midst of an opioid and chronic pain epidemic, it is also essential to understand the role of physical and psychological suffering in chronic pain, opioid use, and suicide. Based on these findings, pain-related interventions must address depression, opioid misuse and overdose, and suicide. Because there is such stigmatization with chronic pain, opioids, and depression individually and altogether, these issues must be assessed and configured into the treatment for chronic pain.

Summary

Based on the literature review, chronic pain is a condition that produces physical and emotional distress and is best treated with a multidisciplinary model of pain management. Individuals who experience chronic pain prove to have multiple biopsychosocial concerns because of the number of existential challenges they face; when addressed, existential concerns and crises are less likely to leave as lasting of an impression compared to if they are not addressed. Screening patients with a reliable and

valid tool like the PHQ-9 for depression can effectively start a conversation about depression and other existential concerns. Exploring pain clinics processes for screening chronic pain patients with the PHQ-9 will useful insights. After collecting the number of overall screenings that take place, breaking the numbers into two separate groups, patients treated with opioids and patients treated without opioids, may strengthen the association between the use of the PHQ-9 in specific populations. In breaking the data into two separate categories of patients using opioids and those using other medications for control of chronic pain, the results may correlate with chronic pain, depression, and opioids.

This study goes a step further to examine the number of mental health referrals generated by multidisciplinary pain clinics for mental health services. Again, the data can be branched even more into the number of mental health referrals generated for opioid-treated patients compared to non-opioid-treated chronic pain patients. Separating the groups allows researchers to determine any relationships between PHQ-9 scores, the incidence of depression, opioids, and mental health referrals. The research is essential for pain management and chronic pain patients to encourage conversations about depression and existential concerns. Targeting this population offers an opportunity for research to identify how best to screen for depression and when to offer mental health referrals (Ashrafioun et al., 2017). Additionally, this research is important for social change because of the opioid epidemic, the prevalence of depression in chronic pain management, and the number of individuals living with chronic pain.

Chapter 3: Research Method

Introduction

This study explored the use of, and scores of, the PHQ-9 in pain clinics for chronic pain patients treated with and without opioids. It also explored any relationship between PHQ-9 scores and mental health referrals in chronic pain patients and compared the prevalence of referrals in opioid-treated patients compared to patients not treated with opioids. Descriptive statistics and multiple logistic regression were used for the statistical analysis. Chapter three of this study describes the study design, participants, participation requirements, the instrumentation used, data analysis, and strengths and limitations. Included is a discussion about the rationale for selecting the research design, sample size, and participant characteristics. The methodology is described along with an explanation of the population studied, sampling procedures used, data collection processes, and the plan for data analysis.

Purpose of the Study

The purpose of this quantitative study is to give pain professionals and individuals living with chronic pain insight into how pain clinics assess for depression and generate referrals for mental health services. Prior research has found a strong association between chronic pain and depression, but the literature lacks information regarding pain clinics that use screening for assessment of depression and how the decision to generate a mental health referral for those who score in the moderate to severe range is determined. Also lacking is comparative data between the scores of patients assessed and given a referral who are treated with opioids compared to patients who are not treated with opioids (Hong

et al., 2018). Currently, the research finds that pain clinics using the PHQ-9 sometimes generate mental health referrals but that depression screening for patients in treatment with chronic pain is inconsistent and that appropriate referral for warranted mental health support does not occur. The concern is that not all patients who endure chronic pain are being assessed for depression, and if they are, they may not be receiving mental health referrals even when their scores are high. Because the strength of the association between depression is so strong, and because opioid treatment appears to increase the risk of depression even further, the information is deemed crucial.

Another purpose of this study speaks to the biopsychosocial elements of chronic pain and the existential impact that chronic pain has on the patient's quality of life, relationships, inter and intrapersonal turmoil, and ability to find meaning and purpose in the painful suffering of life (Costanza et al., 2021). While it may be that pain specialists and pain patients are having discussions on existential topics, the research to support this is deficient (de Siqueira, 2018). Also deficient is research to support the prevention of existential crisis in chronic pain patients. Chronic pain and depression, separately, are known to evoke existential crises, and when coupled together, the likelihood of an existential crisis double (de Siqueira, 2018). Add to the mix of chronic pain and depression and the prescribing of opioid pain medications, and the risk increases further (de Siqueira, 2018). Framing this study from a biopsychosocial view that considers existential concerns will bridge the gap in the existing research.

Yet another purpose of this research is to incorporate the current preferred method of managing chronic pain. Currently, the medical model supports multidisciplinary pain

management practices where providers refer patients who score moderate to severe for depression for mental health services (Sokol et al., 2021). Multidisciplinary approaches to pain management comprise several medical specialties and subspecialties to treat chronic pain. Formulating this study from a multidisciplinary perspective served the majority of pain management clinics that screen for depression and refer patients as needed for mental health services (Hong et al., 2018). This way, the results of this research can be generalized and applied to future studies. In doing so, the results have the potential to serve more than just the pain community.

Review of Major Sections

A review of the major sections of this research includes a description of each section in detail. A review of the research design, rationale for the design, and the role of the researcher. Next, the methodology and instrumentation are examined and explained. The plan for data analysis and trustworthiness issues are clearly defined and stated. Ethical procedures are also outlined. Finally, a summary of the chapter is provided.

Research Questions and Hypotheses

There are three primary research objectives for this project. First is to examine the prevalence of the use of the PHQ-9 in chronic pain patients receiving care from dedicated pain clinics who are treated with or without opioid pain medications. Second are the PHQ-9 scores in these patients. The third objective is to examine the number of mental health referrals provided to the represented patients who score moderate to severe for depression on the PHQ-9. Covariate considerations that will also be examined are age, ethnic background, race, and gender. Analysis of the groups of covariates will

explore any confounders in the relationships between them and the variables used in this study. The following research questions and associated hypotheses (HO = null hypothesis, HA = alternative hypotheses) in this study:

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by pain clinics for all chronic pain patients?

HO1-Pain clinics use the PHQ-9 to assess all patients for depression at every office visit.

HA1-Pain clinics are not using the PHQ-9 to assess all patients for depression at every office visit.

Research Question 2: What percent of all patients in the participating pain clinics are treated with opioids versus those not treated with opioids?

HO2-More than 50% of all participating pain clinics patients are treated with opioids.

HA2-50% or less of all participating pain clinic patients are treated with opioids

Research Question 3: Is there a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid patients in a pain clinic?

HO3-There is a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

HA3-There is no relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

Research Question 4: Is there an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

Four research questions are used in this study. The first question is for descriptive purposes and asks if pain clinics screen all chronic pain patients for depression using the PHQ-9. The null hypothesis for this question states that pain clinics use the PHQ-9 to screen all patients for depression. The alternative hypothesis states that pain clinics are not using the PHQ-9 to screen for depression. The dependent variable is the use of the PHQ-9; the independent variables include opioid-treated and non-opioid-treated patients. Covariates used for further evaluation are age, gender, race, and depression.

The second research question is also descriptive, asking the percentage of all patients at the participating pain clinics treated with opioids compared to the percent not treated with opioids. The null hypothesis posits that the percentage of opioid-treated patients will be more significant than patients not treated with opioids. The alternative posits that there is no significance between the number of patients treated with opioids compared to those who are not. The dependent variable includes pain patients in a pain clinic. The independent variables are patients treated with opioids and patients not treated with opioids. Again, the covariates for the future are age, gender, and race.

The first two research questions use descriptive statistics to describe differences between patients. More specifically, the statistics establish participants who are treated with opioids and those who are not. In doing so, the patients can then be delineated into opioid-treated and non-opioid-treated groups. From the descriptive statistics, a baseline

for both categories offers detailed information about between groups. Differentiating

between the opioid-treated and non-opioid treated patients is relevant to this study

because depression and suicide are more common in patients with chronic pain,

especially if treated with opioids. The covariates add dimension to the research and open

the topic to future research.

Questions three and four compare and evaluate associations and are generated

because of the evidence showing the relationship between depression and chronic pain.

Question three analyzes if a relationship exists between moderate to severe PHQ-9 scores

in opioid-treated compared to non-opioid-treated chronic pain patients in a pain clinic.

The null hypothesis suggests a relationship between moderate to severe PHQ-9 scores in

opioid-treated compared to non-opioid-treated chronic pain patients in a pain clinic. The

alternative suggests no relationship between moderate to severe PHQ-9 scores in opioid-

treated compared to non-opioid-treated chronic pain patients in a pain clinic. The

dependent variable is the PHQ-9. The independent variable is the resulting PHQ-9 scores.

The covariates used for additional information are age, gender, race, and depression.

The fourth question tests for associations between PHQ-9 scores in opioid-treated

chronic pain patients compared to non-opioid treated patients and mental health referrals

generated in the two distinct samples. The null hypothesis asserts an association between

PHQ-9 scores in opioid-treated chronic pain patients compared to non-opioid treated

patients and the number of mental health referrals generated from the scores. The

alternative hypothesis asserts no association between PHQ-9 scores in opioid-treated

chronic pain patients compared to non-opioid treated patients and mental health referrals.

If a relationship between PHQ-9 scores and opioid-treated and non-opioid-treated patients exists, it can advance research on the impact of chronic pain and depression. Evaluating the strength of the association between chronic pain and depression and chronic pain and depression in patients treated with opioids as compared to those who do not provides chronic pain professionals with more detailed information about quality of life. Referrals generated for mental health services can provide a more profound sense of the research from the perspective of the need for mental health services in all chronic pain patients. Differentiating between patients treated with opioids and those not treated with opioids will expound research for the chronic pain community and the opioid epidemic. Currently, some pain clinics use the PHQ-9 to screen for depression and give referrals to mental health services based on the scores, and some do not. The research questions are intended to justify depression in patients with chronic pain but for the greater good of a population that faces many challenges.

Research Design and Rationale

As noted throughout this study, past research shows strong evidence of the high incidence of depression in chronic pain patients, especially those treated with opioids (Sheng et al., 2017). What is missing from current data is information that reveals at what intervals the PHQ-9 is used for measuring depression in chronic pain patients in pain clinics. Additionally, it is unknown whether chronic pain patients assessed with the PHQ-9 are offered mental health referrals when their scores indicate moderate to severe depression. Comparing chronic pain patients treated with opioids and those not treated with opioids adds another layer of depth to existing research. Few studies have examined

how depression screening occurs in pain clinic and how the information from the screening tools is used to identify patients with depression, even if there is a vast amount of knowledge of how depression impacts the lives of patients with chronic pain. The opioid epidemic has prompted the medical model practitioners to evaluate opioid prescribing practices in all areas, especially pain management, one of the medical subspecialties most affected by the epidemic (Dowell et al., 2016).

Rationale for Covariate Inclusion

Previous research has demonstrated that the covariates in this study affect many aspects of chronic pain. Some of the relevant factors aligned with this research are pain severity, treatment modalities, depression screening, screening results, and treatment sought for depression. Age, ethnicity, race, and gender have been shown to affect each of these factors, some more significantly than others. Including these covariables in this research has the potential to add to the research through examination for relationship to the primary variables. Grouping these results into categories of patients treated with opioids and patients not treated with opioids enhances this and future research.

The covariates marked for this study represent the demographic and social factors for the physical and psychological distress related to chronic conditions and depression. Take, for example, age. Age is a known factor in pain severity, comorbidity of depression, the period in which individuals seek healthcare to treat chronic pain, the types of treatments used, and the prognosis of chronic pain (Zajacova et al., 2021). Pain severity and depression levels are higher in both younger and older adults, but levels are more consistent in middle-aged adults (Zajacova et al., 2021). Moreover, adequate

physical and psychological therapies for young adults vary significantly from the most effective therapies most effective for older adults (Domenichiello & Ramsden, 2019).

Along with age, Umeda and Kim (2019) noted variances between gender, race, and ethnicity in the prevalence of chronic pain (see Table 1). In their study, the authors found more females than males to have pain and widespread pain (Umeda & Kim 2019). Females are also more apt to seek physical and psychological treatments related to chronic pain (Zajacova et al., 2021). Interestingly, males had better outcomes of pain treatments when they followed through with the complete treatment regimen than females (Zajacova et al., 2021). Females were also more likely than males to try non-pharmaceutical treatments than men. In another study, males were less likely to follow through with psychological treatments (Bérubé et al., 2017).

Racial and ethnic factors influence the prevalence of chronic pain, depression, and treatment outcomes. Results from the previous study revealed that Black and White individuals are more sensitive to pain and less tolerant of pain (Umeda & Kim, 2019). Hispanic-Americans were less likely to report pain conditions and disability than non-Hispanic White individuals (Umeda & Kim, 2019). Also noted in the study was evidence of pain differences among Asian and Native Americans (Umeda & Kim, 2019). Although the relationship between the reporting of chronic pain and depression by ethnicity is unclear, chronic pain and depression did vary among ethnic groups (Nicholl et al., 2015). In a relevant study by Nicholl et al. (2015), a statistically significant association between the presence of both depression and chronic pain was highest in black individuals when confounding variables were adjusted.

Table 1

Prevalence of Chronic Pain Conditions in the US Adults (NHANES 1999-2004).

Table 1. Prevalence of Chronic Pain Conditions in the US Adults (NHANES 1999–2004).

	No Chronic Pain	Localized Chronic Pain	Widespread Chronic Pain	*P*-value [a]
Total				
Unweighted (*n*)	12,387	1608	504	
Weighted, % (SE)	84.52 (0.65)	11.85 (0.51)	3.62 (0.24)	
Gender, % (SE)				<0.001
Men	49.92 (0.50)	43.61 (1.72)	40.27 (3.21)	
Women	50.08 (0.50)	56.39 (1.72)	59.73 (3.21)	
Age groups, % (SE)				<0.001
Young adults	42.00 (0.86)	31.21 (1.51)	27.09 (3.25)	
Middle aged adults	36.22 (0.70)	44.28 (1.55)	52.66 (3.39)	
Older adults	21.78 (0.60)	24.51 (1.14)	20.25 (1.84)	
Race/ethnicity, % (SE)				<0.001
Non-Hispanic White	70.83 (1.64)	78.70 (1.99)	77.92 (2.63)	
Non-Hispanic Black	11.38 (1.03)	9.15 (0.98)	10.49 (1.48)	
Other Hispanic/Races	17.79 (1.62)	12.15 (1.85)	11.59 (2.35)	
Education level, % (SE)				<0.001
<High school	20.30 (0.71)	21.12 (1.21)	28.49 (2.38)	
High school or equivalent	25.66 (0.79)	29.61 (1.39)	27.69 (2.66)	
Some college or AA	28.94 (0.74)	31.42 (1.32)	31.23 (2.38)	
College grade or above	25.10 (1.10)	17.84 (1.13)	12.59 (2.07)	
Marital status, % (SE)				0.015
Married or living with partner	62.36 (0.9)	66.77 (1.78)	65.12 (2.49)	
Others	37.64 (0.9)	33.23 (1.78)	35.88 (2.49)	
Annual household income, % (SE)				<0.001
<$35k	37.88 (1.17)	41.07 (2.18)	52.00 (2.97)	
$35k–<$65k	28.39 (0.81)	31.31 (1.49)	28.63 (2.78)	
≥$65k	33.73 (1.49)	27.62 (1.97)	19.37 (2.34)	
Weight status [b], % (SE)				<0.001
Normal	35.98 (0.74)	30.49 (1.25)	25.40 (2.77)	
Overweight	34.69 (0.68)	33.81 (1.37)	29.03 (2.68)	
Obese	29.33 (0.80)	35.70 (1.34)	45.57 (3.21)	
Health conditions, % (SE)				
High BP	25.27 (0.68)	34.85 (1.66)	38.42 (2.38)	<0.001
Diabetes	6.17 (0.29)	9.88 (0.91)	13.84 (1.56)	<0.001
Asthma	10.95 (0.38)	16.17 (1.12)	20.67 (2.45)	<0.001
Arthritis	17.70 (0.53)	41.48 (1.65)	65.71 (2.61)	<0.001
Heart disease	2.95 (0.22)	5.88 (0.49)	8.18 (1.35)	<0.001
Osteoporosis	3.98 (0.26)	7.66 (0.82)	18.11 (2.19)	<0.001

[a] *P*-value for a Rao-Scott Chi-square test of independence; [b] weight status was determined based on the body mass index (kg/m^2).

Note. From "Attitudes Toward Dissertation Editors," by W. Student, 2020, *Journal of Academic Optimism*, *98*, p. 11 (https://doi.org/10.xxxxxxxxx). Copyright 2020 by Academic Publishing Consortium. Reprinted with permission.

Methodology

The observational cross-sectional study employed de-identified data from the participating pain clinic that uses the PHQ-9 to screen all patients for depression. The

study ran descriptive statistics and grouped the results into sections of opioid-treated and non-opioid-treated participants. From these results, a multiple logistic regression was completed to explore the association between moderate to severe PHQ-9 scores in patients treated with opioids compared to non-opioid treated patients. Included in the multiple logistic regression, is an analysis to examine any association between moderate to severe PHQ-9 scores on the number of mental health referrals generated in both samples. Covariates of the associations were also included. Further, the methodology used, including the population studied, sampling procedures, data collection process, and data analysis plan, have been addressed.

The dependent variables, as previously defined, remain the use of the PHQ-9 and mental health referrals. Also previously defined are the independent variables, as opioid-treated patients, non-opioid-treated patients, and PHQ-9 scores. Covariates included are age, gender, race, and depression. The PHQ-9 measures depression scores with nine questions rated on a Likert scale. The range of questions on the Likert scale is not at all, several days, more than half the days, and nearly every day. Mental health referrals are measured dichotomously with a yes or no outcome.

Figure 2

PHQ-9 Scoring and Interpretation Guide

PHQ-9* Questionnaire for Depression Scoring and Interpretation Guide

For physician use only

Scoring:
Count the number (#) of boxes checked in a column. Multiply that number by the value indicated below, then add the subtotal to produce a total score. The possible range is 0-27. Use the table below to interpret the PHQ-9 score.

Not at all   (#) _____ x 0 = _____
Several days   (#) _____ x 1 = _____
More than half the days (#) _____ x 2 = _____
Nearly every day   (#) _____ x 3 = _____

Total score: _____

Interpreting PHQ-9 Scores

Diagnosis	Total Score	For Score	Action
Minimal depression	0-4	≤ 4	The score suggests the patient may not need depression treatment
Mild depression	5-9	5 - 14	Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
Moderate depression	10-14		
Moderately severe depression	15-19	> 14	Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment.
Severe depression	20-27		

* The PHQ-9 is described in more detail at the Pfizer website: http://www.phqscreeners.com/

The dependent variables, the use of the PHQ-9 and mental health referrals, had only two outcomes although the intervals at which screening occurs were noted to provide information for pain practitioners on the most optimal time to screen for depression. The PHQ-9 was either used or not. The same goes for mental health referrals. A mental health referral was given, or not. The independent variables, treated with opioids and non-opioid treatment, are dichotomous with yes or no outcomes. PHQ-9 scores are categorical independent variables ranging from 0-4 for minimal or no depression, 5-9 as mild depression, 10-14 moderate depression, 15-19 moderately severe, and 20-27 severe (Pfizer, n.d.).

A benefit of using the PHQ-9 is that it is used frequently to evaluate depression in people with chronic medical conditions such as chronic pain. Although more accurate

measures may be available, the PHQ-9 is adequate for a general measure, and the scores are easy to calculate. This research focused on moderate (10-14) to severe (15-27) scores. While the PHQ-9 groups the moderately severe to severe in different categories, this study grouped scores as moderate to severe for one entire group. Changing the grouping of the scores did not change the results from the patient's point of view and had no bearing on the patient's care. The data was previously collected, and the decision of the provider to refer the patient to mental health services was already made.

Observational studies evaluate the variables in a sample without interfering. Cross-sectional designs are a type of observational study where the researcher measures the outcome and exposure impact on the participants simultaneously (Setia, 2016). Cross-sectional designs are optimal for population-based data and the prevalence of outcomes, especially for chronic medical or mental conditions (Setia, 2016). Because cross-sectional studies collect data of the exposure variable and the outcome simultaneously, they can study associations or describe characteristics of the population (Cataldo et al., 2019). This design is appropriate for this research study because it observes and measures its outcomes at a single point in time. In short, this design is appropriate because it measured the number of pain patients in a pain clinic, treated with opioids or not, who were assessed for depression with the PHQ-9, and measure the number of patients who were referred for mental health services, all together.

A benefit of using an observational cross-sectional design is that they are relatively inexpensive to conduct. Another advantage to this type of design is that it takes an overview of a population in a relatively short amount of time (Wang & Cheng, 2020).

Furthermore, the study population used available participants with potential relevance to the research question. Wang and Cheng (2020) appraise observational cross-sectional designs as favorable to use in medical research in that they provide an understanding of the prevalence of disease or conditions in a population. An asset specific to a cross-sectional design is to generate additional hypotheses for future studies (Wang & Cheng, 2020). Understanding the prevalence of outcomes and exposures can inform other study designs.

Using an observational cross-sectional design in quantitative research is advantageous for several reasons, but they are not without disadvantages. A weakness of the design is that they cannot assess incidence and make causal inferences (Wang & Cheng, 2020). Larger, heterogenous participants are needed in cross-sectional studies because they can be susceptible to sampling bias. Moreover, if a potential association is identified, it may be challenging to interpret due to confounding variables or limited sample size (Wang & Cheng, 2020). While these designs are relatively inexpensive, they require more participants than others, such as a case study. There is also a high rate of return responses and dropout that is known to occur in observational cross-sectional studies.

Applicable to this research, an observational cross-sectional design offers a way to evaluate the outcomes of depression using the PHQ-9 in chronic pain patients treated with or without opioids. By taking these outcomes and measuring them against the number of mental health referrals provided according to the PHQ-9 scores, a broader picture emerged of the number of chronic pain patients treated with opioids compared to

those who are not treated with opioids, who are referred out for mental health services. Identifying any variations between the prevalence of depression in opioid-treated patients and those treated without opioids, and at which pint screening occurs in the treatment plan, may provide more advanced treatment options for opioid-treated chronic pain patients. Considering that opioid-treated patients' trend towards a higher incidence of depression and suicide, the result of the study also measures differences in which of these samples is referred for mental health differences. The differentiation found in the results can be used to support pain clinics to incorporate mental health resources within the treatment plan. Implementing depression screening and initiating a mental health referral at the earliest point will help prevent depression and, ultimately, suicide.

Setting and Sample

Once approved, the data for this study was collected from de-identified data from a pain clinic in the Midwest. The data was be extracted from the records of patients diagnosed with pain for a period of three or more months according to the standard criteria for chronic pain. Records of patients not diagnosed with depression prior to referral to the pain clinic and patients diagnosed with depression before referral to the pain clinic were considered. More than 130 records were reviewed for optimal results to reach the optimal power level of significance (Diebold, 2021). According to an a piori analysis conducted via G*Power (Faul et al., 2009) data from 208 participants were needed to effectively power a t-test to answer this research question (Faul et al., 2009).

Although only 208 participants were necessary, a total of 300 participants were used to obtain the best possible accurate results. This study utilized descriptive statistics,

frequencies, and logistic regression. The logistic regression yielded a greater sample size. The number of patients needed to power a t-test to answer Research Question 4, was 208. A generally accepted power (0.80) was incorporated.

Permission to gain access to the data was obtained with Walden University's Institutional Review Board (IRB) approval. The pain management clinic was emailed with an explanation and statement of purpose for the study; an invitation to schedule a time to discuss the details of the study was extended.

The targeted population were chronic pain patients treated at a dedicated pain clinic. A pain clinic that treats patients from a multidisciplinary approach and considers biopsychosocial concerns was contacted and invited to partake in the study based on the details of the study. A pain clinic that use the PHQ-9 for depression screening was chosen for participation to provide standards for the data. All communications between the clinic manager and research director were logged and saved. The study's goal, the participants, and the ethical implications were provided. IRB approval and informed consent forms was included with the original proposal.

The intended audience and recipients of the completed study results was shared with the pain clinic. All requested data was de-identified data from electronic health records and grouped into three categories. Common among the categories were patients diagnosed with chronic pain treated with opioids and patients diagnosed with chronic pain who are not treated with opioids. The first category was patients screened with the PHQ-9. The second category was patients screened with the PHQ-9 who scored in the moderate to severe range for depression. Finally, the third category was patients screened

with the PHQ-9, who scored in the moderate to severe range for depression, to evaluate if they were provided with a referral for mental health services.

Probability and nonprobability sampling are the sampling procedures used in this project. Probability sampling is the selection of participants from the intended population. For the intent of this study, the population was patients diagnosed with chronic pain who obtain medical services from a pain clinic that uses a multidisciplinary model (Setia, 2016). Probability sampling is made up of individuals who represent the chronic pain population. Nonprobability is different from probability sampling in that participants are used because of convenience, availability, and representation of the targeted population for this study (Setia, 2016). Specifically, this type of sample is simple random sampling from a convenient sample.

Justification for using both probability and non-probability sampling is the wide range and specificity of participants needed for optimal results. A wide berth of specific participants allows for a population with similar characteristics. For the purposes of this research, the population was patients diagnosed with chronic pain. The sample also allowed for generalizations about the targeted population. Generalizing the population opens the doors for future research. Additionally, the sample acknowledges participants from a wide range of ages, different ethnic backgrounds, races, and gender.

Procedures

Consent to conduct this study was obtained first from the IRB at Walden University. Once it was approved, the study was proposed to the participating pain clinic. A brief synopsis of the study was included in the invitation. The entire proposal was

available upon request of the clinic. One dedicated pain clinic was invited to partake in the study. One criterion for participation was that the pain clinic use the PHQ-9 as a measure to screen for depression, with the goal to include at least five pain clinics or as recommended by IRB.

Once the approvals and criteria were met, the de-identified data was collected. Ultimately, the aim was to obtain the electronic health records of 150 individuals, more if they were available for these purposes. More data available for descriptive statistics and multiple logistic regression will ensure the most accurate results. The latest version of International Business Machines Corporation (IBM) SPSS 26.0 for the Mac computer was downloaded with permission and availability from Walden University. Once downloaded, the data was inputted. After sufficient data was logged into SPSS, descriptive statistics and multiple logistic regression were run for analysis.

The data requested was obtained from random electronic health records from 2019-2021. This is unique in that it provided recorded results during the Covid-19 pandemic. Studies ranging before the pandemic were likely to differ from this research. The study framework is quantitative, using an observational, cross-sectional design. An observational design allows for research that the researcher observes. The cross-sectional aspect of the design permits data to be evaluated simultaneously as observed.

Instrumentation

Data was collected from the potential pain clinic from 150 or more patient charts. Criteria for the study included patients diagnosed with chronic pain for more than three months, treatment for the diagnosed chronic pain specifically at a dedicated pain clinic,

and patients treated with and without opioid pain medications. Patients who were screened for depression with the PHQ-9 were targeted. No age, gender, ethnicity, or race exclusions were made. The type of chronic pain condition diagnosed were not distinguished in this analysis; all types of chronic pain were included. The participating pain clinic uses a multidisciplinary approach to treatment.

The use of the PHQ-9 is warranted because the PHQ-9 is found to be an accurate measure of depression in patients with chronic conditions (Costantini et al., 2021). The PHQ-9 was developed by Drs. Spitzer, Williams, and Kroenke in 1999 with a grant from Pfizer, Inc (Plemmons, 2019). Note: Pfizer holds the copyright to the PHQ-9 but allows its replication and use without permission needed. Comparatively, the PHQ-9 has diagnostic validity to other measures used as brief depression screens according to Major Depression Disorder according to the DSM-5 (Plemmons, 2019). Accordingly, the PHQ-9 is widely used in primary care settings and with chronic medical conditions such as chronic pain. Also of note, the PHQ-9 is available in over thirty languages and is validated for the use of adults, in all genders, and a wide variety of races and ethnic backgrounds (American Psychological Association, 2020).

Furthermore, the use of the PHQ-9 for this research was ideal because it has such a high construct and criterion validity (Sun et al., 2020). Due to that and the high test-retest reliability, the PHQ-9 is often used in medical specialties that treat chronic conditions (Levis et al., 2019). In a setting such as pain management, the PHQ-9 is appropriate as it can be given to patients prior seeing their pain provider and the results can be measured during the office visit. The ease in which the PHQ-9 can be taken and

scored is another benefit of the tool. These factors, taken together with the amount of

research on the reliability and validity of the PHQ-9, were considered in the decision to

use the tools for this study. Given the clear association between chronic pain and

depression, and the scarce amount of information on how pain clinics screen their

patients, this tool provides the necessary information as proposed.

<div align="center">**Threats to Validity**</div>

Internal Validity

Internal validity refers to the accuracy of the conclusions of the study. For

quantitative research such as this, internal validity can be affected by how the study is

designed and potential threats to the accuracy of the design results. While an

observational study, this study may or may find relationships among the variables but not

the cause of the relationship. There are several potential threats that apply to this

research. History is one threat where the environment may skew the results; a participant

who completes the PHQ-9 may not accurately represent their symptoms (Lærd

Dissertation, 2021). Maturation is another threat to internal validity; participants, for

instance, may have changes in pain levels that affect depression (Lærd Dissertation,

2021). Instrumental threats to internal validity can be found in self-report measures, such

as with the PHQ-9. Respondent variances such as time of day, pain level, place in life,

and more, may impact the results. While the PHQ-9 is a proven sound measure, the

variables that affect chronic pain and depression are wide-ranging. One initiative of

multidisciplinary clinics is to assess and treat patients as soon as issues arise or are

identified. Inconsistent use of the PHQ-9, or on the contrary, overuse of the PHQ-9, may

impede accurate depictions of depression. It can become problematic to the pain provider if the self-report measure is not taken seriously or is completed to suffice the provider.

Additional internal threats to this research also emerged during analysis. PHQ-9 scores that were not calculated correctly or not addressed at the visit may have affected the mental health referral. An inaccurate low score of the PHQ-9 may have led to the failure to provide a mental health referral when one was necessary. On the other side, an inaccurate high score may have led to an unnecessary referral. These inaccuracies could have potentially broke the trust rapport in the therapeutic relationship between the patient and provider. When this occurs, treatment outcomes may be diminished.

Selection bias is a threat to internal validity. Pain clinics that only use the PHQ-9 or those that do not screen for depression may not accurately depict the sample. So too, pain clinics that only treat with medication management, regardless of if the medication is an opioid or not, may not correctly represent the variables in this study. In line with selection bias, participant bias is a threat to validity. Participants who are all one group of age or gender do not adequately represent the population of chronic pain patients or pain clinics. The same is true of race and ethnicity.

If a random sample was not obtained, if there were limitations of any categories, the results of this study would not have accurately embodied the population and sample (Lærd Dissertation, 2021)

Personal biases of the researcher or the clinic supplying the data could have potentially threatened internal validity. As a healthcare worker who worked for many years with pain patients, I would did feel comfortable choosing the electronic health

records of the participants myself due to potential bias of patients and information gathered. For this reason, a specific pain clinic was sought for data to compare between groups. It would have been remiss not to include a dedicated clinic from a geographical location that had a diverse population regarding race, ethnicity, and age. Data taken from a pain clinic in an affluent area may have missed nuances of a clinic in an area with lowered socioeconomic status.

External Validity

Because this study is observational in nature, the goal was to make generalizations from the findings (Laerd Dissertations, 2012). For instance, this research aimed to generalize data from a pain clinic that screens all chronic pain patients with the PHQ-9 and, based on the scores, patients were referred for mental health services. The data from the results were meant to represent chronic pain patients treated with or without opioids in a dedicated pain clinic. For this and any research to be externally valid, the researcher must be confident that the conclusions made from the sample closely mirror the population being studied. Utilizing the data from a dedicated pain clinic wass a way of ensuring that the characteristics unique to patients diagnosed with chronic pain were reflected.

Aligned with strong generalizations about the population, another way to increase external validity as to ensure that the context and setting of this research were consistent (Lærd Dissertation, 2021). Obtaining data from a dedicated pain clinic and from diverse participants ensured that the results were just as effective when carried out in different settings. Where this research may be limited is in time generalizations. Observational and

cross-sectional studies can be limited because they do not analyze data over extended periods (Lærd Dissertation, 2021).

Just as internal validity can succumb to selection bias, selection bias can also threaten external validity. Information obtained from a pain clinic that chooses which data to share based on specific data or participant characteristics would not represent a general chronic pain population. Another threat to external validity was if the charts of patients only scoring in the moderate to severe range on the PHQ-9 were provided. Had that been the case, then analysis of only patients with a potential diagnosis of depression would have had to be represented and not the general pain population. Another possible limitation of this research was the number of participant charts that were used. A low number of participants may not have accurately mirrored the chronic pain population.

Opioid treatment versus non-opioid treatment may affect internal and external validity as well. If all or most of the data wass from patients treated with opioids, the criteria of this study would not have been met. Using only opioid-treated or non-opioid treated participants would have only reflected that specific population. Because this study was based on both opioid and non-opioid treated chronic pain patients, the number of participants was balanced. Threats to internal validity and external validity again include selection bias. Time of treatment with opioids could have added another dimension to the study and threaten validity (Laerd Dissertation, 2012).

Ethical Procedures

My long-term experience in the healthcare field prepared me for this research. Additionally, on-the-job and higher education-based cultural training classes have taught

me the importance of considering cultural issues in research. Ethics training through work-based and higher education classes and on-the-job experience have also provided me with a deep appreciation of research ethics. Relevant to the research ethics learned in class are the first-hand experience and examples learned through twenty-five-plus years of working with diverse populations. Working in the medical field at the rise of the Health Insurance Portability and Accountability Act in 1996 and yearly training has provided me with advanced knowledge of confidentiality rules. Maintaining confidentiality of the participants was a primary concern for this research, and privacy rules were strictly be adhered to ensure participant confidentiality.

The same strict compliance rules and privacy regulations apply to research as in healthcare settings; no information was released without informed consent. For this research, it was not necessary to obtain private information. Revealing protected data does not apply to the gathering of information, analyzing of the data, or findings in this research. The specifics of the participants and the pain clinics used was not necessary to produce the results and findings. Great care to protect the identity of the participants diagnosed with chronic pain, pain clinic, and the providers working at the pain clinics was made. Consistent with this assurance, the Walden IRB would have been consulted with any questions or concerns based on their approval.

I had no potential conflicts of interest to note. This research is a step in completing the dissertation required for a doctorate in philosophy in clinical psychology. The research was conducted in my own time without payment of any kind. Participants,

the pain clinic organization, and pain specialist did not receive payment of any kind. All expenses accrued from completing this research were my own.

Summary

The first aim of this research project was to examine the use of the PHQ-9 to screen for depression in patients diagnosed with chronic pain who are treated with or without opioids in dedicated pain clinics. Second, the scores of the patients screened with the PHQ-9 were evaluated to see if a relationship exists between PHQ-9 scores and mental health referrals from pain providers for opioid-treated patients compared to patients not treated with opioids. The research design is quantitative, with descriptive statistics and multiple logistic regression as the statistical analysis. Chapter 3 chronicles the research design in detail and includes criteria for the participants, plan for data analysis, the instruments used, and threats to validity. Methodology, the rationale for the research design, and sampling procedures are also included in this study. This project intends to inform the chronic pain community about the essence of depression screening and mental health referrals in patients treated with and without opioids.

Chapter 4: Results

Introduction

Chronic pain is a worldwide epidemic (Center for Disease Control, 2022). Many patients with chronic pain are treated with opioids and/or other medications. Unmanaged intractable pain and/or poorly managed pain exacerbates the continuing chronic pain and opioid epidemics (Al Achkar, et al., 2017). Some chronic pain patients become desperate for pain control when their pain is undermanaged or when they are cut off from or refused opioid pain medications (Feingold, et al., 2018). Because depression may interfere with adequate pain control and increases the risk of opioid abuse and suicide, it is essential for ongoing and future research to delineate which patients are at a greater risk for poor pain treatment outcomes because of depressive symptoms (Dowell et al., 2016). Indeed, treatment for pain may be an opportunity to provide pain patients with mental health referrals for depression when appropriate. However, little is known about how many pain patients receive mental health referrals from pain treatment providers. This study addressed the gap in current research on how depression screening via the PHQ-9 and the resulting scores are associated with mental health referrals among pain patients.

All patient records from the participating clinic over the years of 2019-2021 were included in the current study. For the current study, the independent variables were as follows: pain clinic, PHQ-9 score(s), non-opioid treated versus opioid treated patients, depression, diagnosis, and PHQ-9 intervals of use. Dependent variables in the study were as follows: the use of PHQ-9 and mental health referrals. Covariates included age, race,

and gender given their potential impact on study variables of interest. The purpose of this chapter is to discuss the descriptive demographic statistics and analysis of statistical data. Statistical analyses investigated the relationship between PHQ-9 scores of chronic pain patients and the number of mental health referrals generated by pain providers for opioid and non-opioid treated patients. The four research questions for this study were as follows:

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by pain clinics for all chronic pain patients?

*H*O1-Pain clinics use the PHQ-9 to assess all patients for depression at every office visit.

*H*A1-Pain clinics are not using the PHQ-9 to assess all patients for depression at every office visit.

Research Question 2: What percent of all patients in the participating pain clinics are treated with opioids versus those not treated with opioids?

*H*O2-More than 50% of all participating pain clinics patients are treated with opioids.

*H*A2-50% or less of all participating pain clinic patients are treated with opioids

Research Question 3: Is there a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid patients in a pain clinic?

*H*O3-There is a relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

*H*A3-There is no relationship between moderate to severe PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

Research Question 4: Is there an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

*H*O4-There is no relationship between PHQ-9 scores, opioid-treated compared to non-opioid patients and the number of mental health referrals generated.

*H*A4- There is a relationship between PHQ-9 scores, opioid-treated compared to non-opioid patients and the number of mental health referrals generated.

Statistical analyses via SPSS v.28 were conducted to answer the above four research questions. Null and alternative hypotheses were considered. Additionally, descriptive statistics were used to provide a summary of the sample regarding PHQ-9 administration intervals, patients treated with and without opioids, and number of mental health referrals. Next, t-test, and logistic regression, were used to answer the guiding research questions of the dissertation.

Chapter four begins with an introduction of the chapter and moves into description of data collection, including the type of clinic the data were collected from, the general geographical location of the clinic, and the data use agreement that was signed to ensure the ethical release of data. The length of time it took to collect study data and the method of data collection are also described. The demographic information, descriptive statistics, and frequencies are included in the section following, along with tables displaying the results. The results of statistical analyses are described in detail in

relation to the research questions and null and alternative hypotheses. Ethical considerations and a summary conclude chapter four.

Data Collection

Data for this study was collected from an outpatient pain clinic in the Midwest of the United States from 2019-2021. This clinic was chosen because it uses a multidisciplinary approach in treating chronic pain. In addition, providers treat patients with and without opioids, and may administer the PHQ-9 to patients. A data agreement was developed for the pain clinic to review and travel arrangements for the researcher to the clinic were approved to collect the de-identified data. Data collection occurred over a three-week period from the clinic's electronic medical records. Records were chosen of 300 patients initially seen by one of the eight participating providers between 2019 and 2021 during either an office visit or telehealth appointment.

During the data extraction phase as a guest researcher not employed at the site, I noticed a change recorded in how patients were administered the PHQ-9 during the height of the Covid-19 pandemic. Prior to the pandemic, the data showed most patients (85% per report of clinic administrator) were administered the PHQ-9 at every office visit, but during the pandemic the number of patients screened with the PHQ-9 decreased. According to Kulchar et al. (2022), medical clinics began to utilize telehealth technology, making it more challenging to administer the PHQ-9 because of time and technical constraints (e.g., lack of patient/staff familiarity with technology, increased demand for visits). Time and technical constraints were due to the urgency to implement telehealth appointments at the start of the Covid-19 lockdown and the lack of staff and patient

knowledge on how to use the new telehealth measures. Given this historically generated variation in practice, it was deemed useful to collect all PHQ-9 data rather than selecting only those in the moderate-severe range as originally described in chapters 1-3. Due to this observation, an application for change to data collection of all recorded PHQ-9 results was requested and granted from Walden's Institute Review Board.

Participants

Chronic pain affects all people despite age, gender, and race (Mullins et al., 2022). Because chronic pain is so widespread, the current study extracted data related to age, gender, and race, to inform, add to previous research, and encourage future research. This section outlines the demographic profiles of the sample. The data illustrates the prevalence of chronic pain according to age, gender, and race in the research sample.

The age range of the sample was 25 to 96 and the overall mean age of the sample was 58 (SD = 15, Median = 59, Mode = 49). In terms of gender, the group were divided across 128 males (42.7%) and 172 (57.3%) females. Of note, at this clinic, patients were only provided two options to define their gender (i.e., male or female). Regarding race, most patients were White/European American (n = 146, 48.7%) and the second largest racial group was Black/African American (n =15, 5%). The number of individuals who declined to specify their race was 93 (31%). There were additionally categories endorsed with 36 (12%) of Unknown individuals and 6 (2%) in the Other category. Finally, the smallest ethnic/racial group was Asian/Asian American (n = 4, 1.3%).

Results

This section contains the results of the statistical analysis according to each of the hypotheses formulated to answer the research questions. The accuracy of data entry was ensured through the process of double entry, both in manually writing the data, and in data entry to computer, reading the data allowed, and visually checking, and rechecking, the accuracy of the data and data entry (Barchard & Verenikina, 2013). These methods are often used in psychological research to further ensure the accuracy (Barchard & Verenikina, 2013).

Descriptive Statistics and Frequencies

Of the entire sample, 142 (47.3%) of the individuals were already diagnosed with depression before the initial visit at this pain clinic by a clinician outside of the pain clinic. Conversely, 157 (52.3%) of the patients were not previously diagnosed with depression prior to the initial visit at the pain clinic. A diagnosis of depression at the initial visit was unknown for one (0.3%) of the patients. As discussed in the literature review, the Patient Health Questionnaire-9 scale was chosen for this study because of length, ease of use, and consistent reliability and validity. The PHQ-9 is often used by providers who specialize in psychiatry, chronic diseases and injuries, and other specialty clinics, to assess patients who are at an increased risk of depression so that depression is addressed as soon as possible.

Regarding PHQ-9 scores, scores ranged from 0-27, with 0-4 indicating no depression, 5-9 mild depression, 10-14 moderate depression, 15-19 moderate to severe depression, and 20-27 severe depression (see Table 2). From the current sample, 91

(30.3%) of the patients scored 0-4, 79 (26.3%) of the patients scored mild, 60 (20%) of

the patients scored moderate, 27 (9.0%) of the patients scored moderate to severe, and 34

(11.3%) of the patients scored in the severe depression range. Table 2 shows the scores

ranged from 0-27, with a mean of 7.83. Table 3 displays the standard deviation as

calculated at 5.86, with a variance of 34.37.

Table 2

PHQ-9 Score Frequencies and Percentages

Score	N	Percentage
0	23	7.7%
1	11	3.7%
2	20	6.7%
3	20	6.7%
4	17	5.7%
5	20	6.7%
6	18	6%
7	15	5%
8	13	4.3%
9	12	4%
10	11	3.7%
11	18	6%
12	11	3.7%
13	8	2.7%
14	10	3.3%
15	10	3.3%
16	4	1.3%
17	3	1.0%
18	5	1.7%
19	6	2%
22	4	1.3%
23	3	1%
25	1	0.3%
27	1	0.3%

Table 3

Descriptive Statistics for PHQ-9 Scores

	N	Range	Mean	Standard Deviation	Variance
PHQ-9 Scale	264	27.00	7.83	5.86	34.37

Table 4 depicts the number of mental health referrals that were generated for study patients from 2019-2021. The referrals, like the PHQ-9, were given at multiple different times during 2019-2021. Specifically, data shows that a mental health referral was generated for 102 (34%) of patients. The number of patients who were not issued a mental health referral was 153 (51%). It is unknown if a mental health referral was provided in 45 (15%) of the sample. The data also indicated that a referral was not always generated when PHQ-9 scores revealed moderate to severe depression. Not all patients who screened in the range of *no depression* were given a referral for mental health services. Mental health referrals were lowest among people with *no depression*, second lowest among people with *mild depression*, and third lowest among people with *moderate depression*. On the other side of the perspective, mental health referrals were highest in people with *moderate to severe depression*, and highest among people with *severe depression*. The data collected does not clearly explain why a mental health referral was not generated every time a PHQ-9 score revealed moderate-to-severe depression.

Table 4

Mental Health Referral Across the Sample

Response	Number of Referrals Generated	Percentage
No	153	51%
Yes	102	34%
Unknown	45	15%

Table 5 displays the frequencies and percentages of how often the clinic screened

chronic pain patients for depression with the PHQ-9 at each visit. Review of records

indicated that the PHQ-9 was administered to 259 (86.35%) of the patients at each visit,

while 41 (13.7%) of the patients were not administered the PHQ-9 at each visit. The

reason the PHQ-9 was not administered to these patients at each visit is unknown, though

a relationship to the effects of the pandemic on clinic procedure may be conjectured. A

personal communication with a member of the pain clinic staff suggests that the newness

of telehealth to clinicians, staff, and patients, is the reason why the PHQ-9 was not

administered at every visit (Heinen, 2022).

Table 5

Number of Times PHQ-9 Was Administered at Each Appointment

Response	Administration	Percentage
No	41	13.7%
Yes	259	86.3%

This sample is representative of pain patients seen in outpatient pain clinics in the

United States given that the range of age of pain patients is so broad (Mullins, et al.,

2022). Each of the 300 patients met the criteria of having been seen by a pain specialist

for pain that had been present for more than three months (Mayo Clinic, 2016). This study is an observational study aimed at generalizing chronic pain patient findings in a pain clinic. Although a larger sample size taken from many pain clinics across the nation could potentially better represent chronic pain patients in the United States, this sample represents a broad range of ages, male and female gender identities, and multiple racial/ethnic categories. According to a study conducted in 2016 by Dowell et al. (2016), chronic pain affects all people, regardless of age, gender, racial/ethnic categories. That chronic pain does not discriminate, as noted in the Dowell study, is consistent with the context, relevancy, and setting of the population of this study to represent the United States.

In general, the majority of the current study sample were White/European Americans females between the ages of 49 and 63. Interestingly, 31 % of the sample declined to specify which race/ethnicity they identified with. After the descriptive statistics were considered, a logistical regression was conducted to evaluate the hypotheses formatted to the four research questions. Alternative and null hypotheses were formulated specifically for the type of research study and criteria for the study. The results of this statistical analysis are described in the following section.

Testing of Statistical Assumptions

Prior to testing of research questions, tests of statistical normality were conducted. Specifically, the normality of PHQ-9 scores was evaluated. Results indicates that the PHQ-9 scores were below the cutoff for skewness (Skewness = 0.73, SE = .15) and

kurtosis (Kurtosis = 0.03, SE = 0.30). No outliers were identified using z-scores. As such, the data was deemed to be normally distributed.

The relationship between demographics (i.e., age, race, and gender) and the first PHQ-9 scores recorded was also examined. The results of a Pearson correlation between did reveal a significant association between age and PHQ-9 scores ($r = -.13$, $p < .05$). Specifically, older age was associated with lower PHQ-9 scores. Results of an independent samples t-test did not reveal significant differences in PHQ-9 scores between men ($M = 7.25$, $SD = 5.48$) and women ($M = 8.24$, $SD = 6.11$), $t(262) = -1.36$, $p > .05$. Finally, a one-way ANOVA was conducted to examine differences in PHQ-9 scores across self-identified racial identity. The overall one-way ANOVA was significant, $F(5, 261) = 4.54$, $p < .001$. The results of post-hoc testing revealed significant differences across racial groups. Asian participants ($M = 18.00$, $SD = 12.29$) reported significantly greater PHQ-9 scores than White participants ($M = 8.21$, $SD = 5.5.76$) as well as participants who declined to specify their racial identity ($M = 6.44$, $SD = 5.21$) or participants whose racial identity was unknown ($M = 6.97$, $SD = 6.18$). No other significant differences in PHQ-9 scores across racial groups were revealed from post-hoc tests (p's > .05).

Results of Research Question One

The objective of the first research question was to describe the intervals, or how often, the participating pain clinic screened all chronic pain patients for depression with the PHQ-9. A post hoc analysis is addressed later in this chapter and in chapter 5. It was hypothesized that the participating pain clinic was not screening all patients for

depression at every visit. Research question one and the associated hypotheses are as follows:

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by the participating pain clinic for all chronic pain patients?

HO1-The participating pain clinic does not use the PHQ-9 to assess all patients for depression at every office visit.

HA1-The participating pain clinic uses the PHQ-9 to assess all patients for depression at every office visit.

To examine this research question, descriptive statistics and frequencies were examined via SPSS v.28 to evaluate how often the PHQ-9 was administered in the participating pain clinic. All patients who were prescribed medications from a provider in this clinic were required to be seen at least once per month for medication checks, refills, and to gauge progress. This policy was especially true for patients who were prescribed opioid medications as required in their Controlled Medication Agreement (CMA). Table 6 shows the intervals at which patients were screened with the PHQ-9. The intervals of PHQ-9 administration are None, Once, Twice, Every Office Visit, Every Other Office Visit, Every Office Visit After Initial Appointment, Yearly, and Patient Refused. Only one patient was recorded as having refused PHQ-9 administration.

Table 6

Number of Times PHQ-9 Was Administered at Each Appointment

Interval of Administration	Number of Participants	Percentage
None	32	10.7%
Once	103	34.3%
Twice	36	12.0%
Every Office Visit	101	33.7%
Every Other Office Visit	14	5%
Every Office Visit After Initial Appointment	6	2%
Yearly	6	2%
Patient Refused	1	0.3%

The descriptive statistics and the intervals in which the PHQ-9 was administered revealed that the PHQ-9 was administered once for 103 (34.3%) patients, twice for 36 (12%) patients, at every office for 101 (33.7%) of the patients, at every other office visit for 15 (5%) of the patients, and for six (2%) at every office visit after the initial visit. Additionally, the PHQ-9 was administered to six (2%) patients yearly, and one (0.3%) patient refused to complete the PHQ-9. The mean of the intervals was slightly above two ($M = 2.04$) which indicates that the average interval in which the participating pain clinic screened patients for depression with the PHQ-9 was twice between 2019-2021. In sum, the figures support the null hypothesis and the alternative hypothesis is rejected; the participating pain clinic did not screen all patients for depression at each office visit.

Results of Research Question Two

The goal of the second research question was to differentiate between patients treated with opioids and patients not treated with opioids in the participating pain clinic.

The first hypothesis predicted that more than half of all the patients would be treated with opioids. The research question and formatted hypotheses are as follows:

Research Question 2: What percent of all patients in the participating pain clinic are treated with opioids versus those not treated with opioids?

HO2-More than 50% of the participating pain clinic patients are treated with opioids.

HA2-50% or less of the pain clinic patients are treated with opioids.

The descriptive data found the number of all patients in the participating pain clinic treated with opioids at the initial visit was 151 (50.8%). The number of patients not treated with opioids was 146 (49.2%). The data is illustrated in Table 7. The number of patients whose opioid treatment was unknown was 3 (1%). The patients treated with opioids was slightly over half and the patients not treated with opioid 49.2%.

Table 7

Number and Percentages of Opioid Versus Non-Opioid Treatment

Response	N	Percentage
No	146	49.2
Yes	151	50.8

Only five more patients (1.6%) were treated with opioids as opposed to non-opioids. When the number of unknown patients is added to the number of non-opioid treated patients the number of patients is 149 (49.7%), making the difference between the number of opioid-treated versus non-opioid and unknown patients even smaller with a gap of only two (0.6%) patients. Therefore, the total difference between the variables is

not statistically significant enough to reject the null or the alternative hypotheses. Half of the patients were treated with opioids and the other half was treated with an alternative.

Results of Research Question Three

The third research question evaluated a relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients. The hypothesis anticipated no relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic. The formulated research question and hypotheses are as follows:

Research Question 3: Is there a relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

HO3-There is no relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

HA3-There is a relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

To test any evidence of a relationship between PHQ-9 scores and treatment with opioids versus non-opioids, a logistic regression was conducted with a Chi-Square test. The result of the test is presented in Table 8.

Table 8

Logistic Regression Assessing Differences in PHQ-9 Scores Across Treatment with Opioids versus Treatment with Non-Opioids

Effect	Exp(B)	SE	95% CI	p
			LL-UL	
Constant	1.02	.22		.000
PHQ-9 Score	0.46	.02	0.97-1.06	.43

The logistic regression was not statistically significant χ2 (1, N = 259) = .63, *p* = .43. Treatment with an opioid medication was not significantly associated with PHQ-9 scores (OR = .0.43, 95% CI: 0.97 – 1.06, *p* = .43). These results do not reveal a statistically significant relationship between PHQ-9 scores and treatment with opioids versus other medication regimens. In other words, people with opioids were not significantly more likely to have higher scores on the PHQ-9 when compared to individuals who were not treated with opioids.

Results of Research Question Four

Research question four targeted a potential association between PHQ-9 scores, opioid treated compared to non-opioid treated patients, and the number of mental health referrals generated based on the PHQ-9 scores. The null hypothesis predicted there would be no association between PHQ-9 scores, opioid treated compared to non-opioid patients, and the number of mental health referrals that were generated based on the PHQ-9 scores. The research question and formulated hypotheses are as follows:

Research Question 4: Is there an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

*H*04-There is no association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

*H*A4-There is an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

To evaluate the validity of the hypotheses, a logistic regression was conducted. The result of the test is presented in Table 9.

Table 9

Logistic Regression Assessing Differences in PHQ-9 Scores Across Treatment with Opioids Results of Logistic Regression Examining the Relationship between Treatment Type, PHQ-9 Scores, and Mental Health Referral

Effect	Exp(B)	SE	95% CI LL-UL	p
Constant	0.68	.14		.01
Opioid Treatment vs. Non-Opioid Treatment	2.15	1.14	0.23 – 19.92	.50
PHQ-9 Score	1.04	.02	0.99-1.08	.13

Results indicated that there was not a significant association between PHQ-9 scores, opioid compared to non-opioid treatment, and the number of mental health referrals generated. The overall logistic regression was not statistically significant χ^2 (3) = 4.70, p = .20. In addition, opioid medication (OR = 2.15, 95% CI = 0.23 – 19.92, p = .50) and PHQ-9 scores (OR = 1.04, 95% CI = 0.99 – 1.08, p = .13) were not significantly associated with the outcome of mental health referral. To conclude, PHQ-9 scores were not significantly higher in patients treated with opioids, nor a greater number of mental health referrals generated.

Post-Hoc Analysis

Due to unexpected observations of the data collected, post-hoc analyses were conducted after the primary data analysis. Specifically, analyses evaluated the relationship between PHQ-9 intervals and the number of mental health referrals that were

generated, as the intervals varied more widely than expected and more widely than office policy would have indicated. The intervals of PHQ-9 administered were labeled as follows: None, Once, Twice, Every Office Visit, Every Other Office Visit, Every Other Office Visit, Every Office Visit After the Initial Visit, Yearly, and Patient Refused. Categories of intervals of PHQ-9 administration were collapsed to facilitate data analysis into the following groups: None to Twice (i.e., None, Once, and Twice), Every Office Visit to Every Other (i.e., Every Office Visit, Every Other Office Visit, Every Office Visit After the Initial Visit), and Yearly/Refusal (i.e., Yearly and Patient Refused).

A Chi-Square test was conducted between PHQ-9 intervals (i.e., variable with interval categories collapsed) and mental health referrals. The results of this analysis suggest indicated that the number of mental health referrals across PHQ-9 administration categories significantly differed. The Chi-Square test was not statistically significant $\chi 2$ $(4) = 13.22$, $p < 0.05$. The results indicated that of those participants who had completed the PHQ-9 zero, once, or two times more than expected, did not receive a mental health referral, and fewer than expected received a mental health referral. Of the participants who received the PHQ-9 at every office visit, every other office visit, and every office visit after the initial visit, more than expected received a mental health referral and fewer than expected did not receive a mental health referral.

Table 10

Results of a Pearson Chi-Square Test Examining Intervals of PHQ-9 Administration and

Mental Health Referral

	Mental Health Referral		
PHQ-9 Administration Group	No	Yes	Unknown
None, Once, or Two Times	97	44	30
Every Office Visit, Every Other Office Visit, or Every Office Visit after the Initial Visit	52	55	15
Yearly/Patient Refused	4	3	0

Validity

This study demonstrated adequate internal and external validity. As far as internal

validity, the study design, conduct, and analysis, answered the research questions

objectively and without bias. Regarding external validity, the data collected was extracted

from deidentified charts from the participating pain clinic. The entire study was overseen

by the owner, clinic manager, and pain management specialist, of the participating pain

clinic. A sample of participants in terms of age, gender identities, and race, was used to

generalize the findings to a wide range of chronic pain sufferers. The external validity

was minimally reduced with only one pain clinic in one specific geographical location

being included in the research.

<div align="center">

Ethical Considerations

</div>

Ethical integrity remained consistent throughout the development of the study,

methodology, data collection, and data analysis. A data use agreement between the

researcher and the pain clinic was constructed and signed by both the researcher and

owner of the pain clinic. The agreement detailed how the data would be kept confidential to ensure the privacy of the clinic and the deidentified charts. The data collection procedures carried no risk to the physical and mental well-being of the patients whose charts were used, as the extracted data did not yield any personal identifiers. The data was stored in a secure and locked location for a minimum of five years. Walden University's Institute Review Board approved the proposed research, data collection, and data analysis. The Institute Review Board approval number for this study is 08-26-22-0524103.

Summary

The first purpose of this quantitative study was to determine what intervals, or how often, depression screening with the PHQ-9 was occurring during 2019-2022. The second purpose of the study was to determine the number of opioid treated patients compared to non-opioid treated patients in the participating pain clinic. Yet another purpose was to establish whether a relationship existed between PHQ-9 scores and opioid compared to non-opioid treatment in the participating pain clinic. The final purpose of the study was to determine if a relationship existed between PHQ-9 scores, opioid treatment versus non-opioid treatment, and the number of mental health referrals from pain specialists in a pain clinic. Overall, the results did not reveal a statistically significant relationship between the variables.

The results of Research Question 1 supported the null hypothesis. Specifically, not every patient in the pain clinic was screened for depression with the PHQ-9. Results of Research Question 2 supported the alternative hypotheses. Research Question 3 did

not reveal a significant relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients. Thus, the null hypothesis is supported. The null hypothesis for Research Question 4 was also supported. Specifically, no association was found between PHQ-9 scores, opioid treated compared to non-opioid treated patients, and the number of mental health referrals generated. The implications for the results are discussed in detail in chapter five.

Chapter five begins with an introduction and explanation of purpose for the study. An interpretation of findings follows with a description of how the findings extend the knowledge as discussed in the literature review. The findings are analyzed and interpreted in the next section in the context of the three theoretical foundations used to frame this study. The limitations and generalizability of the study are outlined in detail. Recommendations for future research are included to bridge further gaps in the knowledge about chronic pain, depression, and mental health referrals. Finally, implications for social change and a summary conclude this research study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The objective of this quantitative study was to understand statistical relationships across PHQ-9 scores, opioid compared to non-opioid use, and mental health referrals among patients with chronic pain. Data was obtained from the medical charts of chronic pain patients treated in a pain clinic from 2019-2021. All data was deidentified and approval for the study was rendered by the owner of the pain clinic and Walden University's Institute Review Board. Descriptive statistics among the demographics and the independent, and dependent variables are reviewed and explained in post hoc analysis. Logistic regressions and Chi-Square tests were used to analyze relationships across the study variables using IBM SPSS v. 28. The following research questions and associated hypotheses were formulated for the study:

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by the participating pain clinic for all chronic pain patients?

HO1-The participating pain clinic does not use the PHQ-9 to assess all patients for depression at every office visit.

HA1-The participating pain clinic uses the PHQ-9 to assess all patients for depression at every office visit.

Research Question 2: What percent of all patients in the participating pain clinic are treated with opioids versus those not treated with opioids?

HO2-More than 50% of the participating pain clinic patients are treated with opioids.

*H*A2-50% or less of the pain clinic patients are treated with opioids.

Research Question 3: Is there a relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

*H*O3-There is no relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

*H*A3-There is a relationship between PHQ-9 scores and patients treated with opioids compared to non-opioid treated patients in a pain clinic.

Research Question 4: Is there an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

*H*04-There is no association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

*H*A4-There is an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

This chapter is dedicated to the discussion of findings presented in chapter four and the interpretation of results. It describes the patterns and relationships among the variables and discusses the inconsistencies and gaps in previous research. The results and how they relate to the expectations of this study and reviewed literature, and contradictions and correlations with the previous research are explored. I begin the chapter with overall interpretation of findings and then address the individual research questions and hypotheses. A summary of interpretation is presented along with the

limitations, recommendations, and implications of this study. Finally, suggestions for future research and a conclusion will be provided.

Key Findings

The key findings of this research study included information that addressed the research gap regarding the intervals at which chronic pain patients who are evaluated at a pain clinic are screened for depression and the number of mental health referrals generated based on these depression screenings. The results of the first research question revealed that most patients were screened using the PHQ-9 once between 2019 and 2021. The second largest group of individuals were screened using the PHQ-9 at every other monthly visit. The results for the second research question revealed that slightly over half (50.8%) of the patients were treated with opioids. Research Question 3 was answered using a logistic regression to examine the relationship between PHQ-9 scores and the opioid compared to non-opioid treatment type. Results revealed that opioid treatment did not significantly relate to higher PHQ-9 scores. Research Question 4 regarded PHQ-9 scores, opioid compared to non-opioid treatment, and the number of mental health referrals that were generated. This question was answered using a logistic regression and results did not reveal a statistically significant relationship across the variables.

Results of a post-hoc analysis revealed the number of participants expected to receive a mental health referral was higher than those participants not expected to receive a mental health referral. This analysis did not control or account for the level of clinical severity on the PHQ-9, these participants may have presented or been interpreted to be "less depressed," and, as a result, either did not receive the PHQ-9 as often or did not

receive a mental health referral. However, future research is needed to explore potential causal relationships. Of the participants who received the PHQ-9 at every office visit, every other office visit, and every office visit after the initial visit, more than expected received a mental health referral and fewer than expected did not receive a mental health referral. Given these results, it is possible that participants who appeared "more depressed" or distressed received the PHQ-9 more often and were more likely to receive a subsequent mental health referral. Alternatively, closer tracking of emotional state may have successfully identified needs more effectively which could then be addressed. Again, future research is needed in this area to explore these post-hoc findings.

Previous research in this area was limited. Specifically, there was little relevant research that examined the relationship of the use of the PHQ-9 and mental health referrals in pain clinics treating patients with opioid and non-opioid medications. As such, while the current study added to this area of research, there remains a clear need for additional research in this area (Bisby et al., 2022). Specifically, Bisby et al. (2022) recommended that researchers pursue projects focused on the use of specific depression assessments (e.g., PHQ-9), the relationship between chronic pain, depression, mental health referrals, and the openness of chronic pain patients to discuss existential concerns with their pain providers. Along these lines, Toledo et al. (2019) suggested research that delineated opioid versus non-opioid treatment and the association of depression among these patients be explored. Finally, Nolan (2018) evaluated the relationship between the PHQ-9 and the Global Pain Scale scores in opioid-dependent patients and encouraged the collection of data about patients currently treated with antidepressant therapy. Thus, the

current study was informed by prior research and calls from researchers to examine this area among chronic pain patients.

Several studies reviewed for this research corroborated findings that people with chronic pain also suffer from depression and that depression is a comorbidity seen with chronic pain over half of the time (Bohjner & Ilgen, 2019; Kroenke, 2021; Rogers et al., 2021). If left untreated, depression can lead to risky behaviors such as drug or alcohol addiction, existential crises, interpersonal turmoil and relationship difficulties, and death via accidental overdose and suicide (Petrosky et al., 2018). As comorbidities, chronic pain and depression exacerbate the risks further and when patients are treated with opioids, the risk of overdose and suicide becomes even greater (Ashrafioun, 2017). Because of these risks, an increasing number of chronic pain patients are referred to multidisciplinary pain clinics for specialized treatment. By assessing chronic pain patients for depression with a proven effective tool such as the PHQ-9, pain specialists can interrupt these risks and offer referrals for mental health services. These themes have distinctive dimensions to them and are described in detail below.

Interpretation of the Findings

In general, this study found that most pain patients were screened for depression with the PHQ-9 at least once, and many were screened monthly. The number of patients treated with opioids outnumbered those not treated with opioids, but the difference was not significant according to statistical tests. Surprisingly, the logistic regression did not reveal a significant relationship between PHQ-9 scores and patients treated with opioids. The results of logistic regression result were also unexpected as no statistical association

existed between PHQ-9 scores, opioid versus non-opioid treatment, and the number of generated mental health referrals. All research questions, hypotheses, and results, from this study are interpreted in this chapter.

It is important, however, to consider how the Covid-19 pandemic affected the administration of the PHQ-9 in the pain clinic. One reason that the PHQ-9 was not administered at each appointment might have been that the Covid-19 pandemic brought time constraints with the use of telehealth appointments. Another reason might have been that the lack of technology and technical knowledge in some patients for optimal use or expanded use of telehealth. While telehealth had been used before the pandemic, many clinics were rapidly forced to implement the technology and were not sufficiently prepared (Kulchar et. al., 2022).

The literature review established the need for more research on depression screening and mental health referrals in patients with chronic pain. The importance of such research will build on the already established research that finds depression and chronic pain as comorbidities (Sternke, et al., 2016). There is also evidence that finds when both chronic pain and depression are diagnosed together, that the symptoms of each condition increases (Sheng et al., 2017). Therefore, advanced research will benefit clinicians and patients who are finding an impasse or plateau in their treatment efficacy. A depression screening tool, such as the PHQ-9, is evidence based and easy for patients to understand and for providers to score and are appropriate and essential to chronic pain clinicians (Costantini, 2021). Although the PHQ-9 is a screening instrument and not a

measure to diagnose depression, it is often used along with a full evaluation by a clinician trained to diagnose depression (Costantini, 2021).

In seeking to identify the intervals in which depression screening should occur, the existing research made it clear that additional knowledge was necessary. The existing research and research gap showed evidence to support the need to research the correlation between depression screening scores and mental health referrals. The outcome of the research is intended to guide pain providers in future research, develop more effective treatment types, and enhance guidelines for depression screening in pain management.

Relationship of Study Findings, the Research Questions, and the Literature

Previous studies on chronic pain highlight a significant correlation between chronic pain and depression (Kosson et al., 2018). Analysis from existing studies concludes that patients with chronic pain are more prone to depression than patients without chronic pain (Bryan et al., 2017). Chronic pain patients are among the highest population treated with opioids (Dowell et al., 2016). When opioids are added to treatment, the risk of overdose and suicide rises (Bryan et al., 2017). There is also the stigma surrounding depression, chronic pain, and opioid use. Alone, each of these factors bring speculation from others; when all three are present, the incidence of stereotyping and judgement increases (Dezutter et al., 2016).

Pioneers and modern-day pain management researchers agree that chronic pain decreases quality of life (Engel, 1977; Fishman et al., 2010). Their research was aligned with the biopsychosocial repercussions of chronic pain. Physically, the daily activities of patients with chronic pain are impacted by the pain with the discomfort and limitations

that chronic pain elicits. Psychologically, chronic pain induces or worsens the symptoms of depression. Socially, many patients find barriers to providing for themselves and their loved ones. Chronic pain patients also reported being withdrawn from societal recreation and obligations.

Research Question One

Research Question 1: At what intervals are depression screening with the PHQ-9 conducted by the participating pain clinic for all chronic pain patients? Of note, the statistical findings from this research question facilitated a post hoc analysis in which the number of mental health referrals across PHQ-9 administration interval was examined.

Research question one was aimed at determining the intervals, or how often, the participating pain clinic screened chronic pain patients for depression with the PHQ-9. The results found in support of the null hypothesis, not all patients seen at the clinic were screened at every office visit for depression with the PHQ-9. The timeline in which the data was extracted for this study was from January 1, 2019, to December 31, 2021. The analysis of the results found that out of the monthly visits required, 34.3% of all patients were screened at least one time, 33.7% were screened at every office visit, 12% were screened twice, 5% were screened at every other office visit, 2% were screened for both every office visit after the initial visit and yearly, and 0.3% of the patients refused to be screened.

Related to research question one, this study concluded that all patients with chronic pain being screened for depression is essential to the pain community. This finding is consistent with the supporting literature. The previous research suggested that

although some pain centers used the PHQ-9 to screen for depression, not all patients measured at a clinical range for depression were referred for psychological treatment. Research question one hypothesized that the pain clinic used the PHQ-9 to assess all patients for depression. The results indicated that even though the pain clinic had a policy of screening all patients at every visit, not all pain patients were screened for depression at every visit. Although the reasons for the lack of screening are beyond the scope of this study, it is possible that the Covid-19 epidemic was a contributing factor.

Chronic pain and depression are often comorbid diagnoses. Previous research indicates that over half of all patients diagnosed with chronic pain are also diagnosed with depression (Adams & Turk, 2019). Past and recent research supports treating chronic pain from a biopsychosocial approach considering the biological, psychological, and sociological factors associated with chronic pain (Adams & Turk, 2018). Archival and recent research consistently reveal that patients who are treated from this perspective have a higher incidence of effective pain management than patients treated from other perspectives (Ballantyne, et al., 2019). The same can be said of depression. Indeed, when biological, psychological, and sociological factors are addressed in the treatment of depression, the effectiveness of treatment is higher (Ballantyne et al., 2019).

It is well established in past research is the association of depression and chronic pain and the challenges individuals face with the comorbidities. Research conducted by Breeden and Rowe (2017) indicates that chronic pain is often exacerbated by depression, regardless of whether or not depression was present before the chronic pain was diagnosed. The authors also agree that both conditions are often misunderstood from a

biological, psychological, and social perspectives. Understanding how the patient perceives pain and how depression impacts the perception, can aid in the treatment plan (Breeden & Rowe, 2017). The biopsychosocial model for treating chronic pain was developed by Engel and colleagues and is a proven method of treating pain and other chronic conditions (Engel, 1977; Fishman et al., 2010; Sullivan & Nicholson, 2018). Incorporating the biopsychosocial model into how pain is treated provides an intersection to address the biological, psychological, and social needs that present with chronic pain.

The biopsychosocial model is important to pain management because screening for depression often opens conversations between pain providers and patients about the deep existential chasm that pain provokes (de Siqueira, 2018). These conversations can be vital for pain patients because chronic pain can change how an individual views their current and purpose in life (de Siqueira, 2018). It can also cause individuals to doubt the value of their existence and how they will contribute to the well-being of their families and themselves (de Siqueira, 2018). When individuals are affected by chronic pain, they often have shifts or limitations in their overall physical abilities compared to their abilities prior to the experience of chronic pain. Their physical abilities may decrease or become limited and as a result, changes to their biological, psychological, and social well-being may affect their perspective of their identity and personhood (i.e., existential experience, de Siquera, 2018). A shift in abilities may trigger an existential crisis, and if the crisis remains unaddressed, it can have dangerous consequences, including depression, and ultimately suicide (Dezutter et al., 2016).

Chronic pain interrupts everyday routines and patterns, changes the expected trajectory of an individual's life, and often results in myriad of existential crises. Chronic pain managed from a multidisciplinary approach enhances the quality of care and decreases costs to the patient, healthcare systems, and society (Nichani et al., 2017). An effective multidisciplinary pain management team includes mental health professionals to address the psychological needs of their patients (Ballantyne et al., 2019). Using a validated measure of depression, such as the PHQ-9, to screen patients for depression is essential. When a patient is screened for depression and the score is clinical, the pain professional could offer a mental health referral. Pain clinics with a mental health professional on-site are an efficient way to get patients the help they need (McCoy, 2016).

Chronic pain is an ongoing concern in the United States and there are alarming rates of depression, overdose, suicide, and opioid use among chronic pain patients (McCoy, 2016). This study evaluated how often depression screening in a pain clinic was occurring to understand the impact of depression screening on mental health referrals for chronic pain. The results showed this pain clinic was not screening all patients for depression at every visit. Furthermore, although mental health referrals were provided for some of the clinical PHQ-9 scores, not all patients who scored in the clinical range were referred for mental health services. These findings suggest that there is work to be done within the pain community because, although many patients are screened for depression, many are only screened at the initial visit. Fortunately, the data from the pain

clinic in this study is encouraging because more than half of all patients showed indication of depression screening at least once.

Literature Review Topics Related to Review Question 1

There were multiple topics introduced in the literature review of this study relevant to research question one. Related to the topic of depression and chronic pain, assessment and screening, the PHQ-9 and chronic pain, depression, and suicide, depression remains the number one comorbidity associated with chronic pain (Constantini et al., 2021; Feingold et al, 2018; Petrosky et al., 2018; & Sternke et al, 2016). Current findings indicate that certain members of this at-risk population are being screened for depression with the PHQ-9. However, consistency was lacking in the intervals, or how often, depression screening occurred. Depression screening at every monthly office visit has the benefit of tracking depression scores over time. These findings could support providers to more consistent routine screening in their monthly pain clinic visits.

As for the opioid epidemic, and opioid prescribing guidelines, the results of this study support the consistent and continued use of the PHQ-9 to screen for depression. Because the research conducted in this study shows high correlations between chronic pain, depression, and opioid use, the results could also guide in the development of stronger opioid prescribing guidelines in settings where opioids are prescribed for chronic pain. Pain clinics that implement guidelines mandating that all opioid patients be screened for depression at every office visit, may slow the growing opioid epidemic by bringing data to bear on standardizing recommendations (Constantini et al., 2021) in

ways that are not currently possible. Other guidelines specific to chronic pain providers, such as requiring that every patient undergo a psychological evaluation or addiction potential evaluation before being treated with opioids, could provide information to mitigate the risk of depression, overdose, suicide and the development of more, non-addictive medications (Petrosky et al., 2018). Even when chronic pain patients use nonopioid interventions to treat chronic pain, the chance that they will develop or be diagnosed with depression is much higher than the general population (Petrosky et al., 2018). Because this study includes all patients with chronic pain and not just those treated with opioids, it is clear that implementing guidelines and recommendations for all chronic pain patients, despite treatment type, is necessary.

The results of research question one are also relevant when considering the neurological components of chronic pain and depression, the need for psychological interventions in chronic pain management, and the types of psychological interventions to treat chronic pain. The literature is clear that psychological interventions must be considered, not only to address psychological ramifications of pain, but all biopsychosocial components (Ballantyne et al., 2019). Neurological conditions associated with chronic pain, such as headaches, neuropathies, and fibromyalgia, are common conditions treated in pain clinics (Johns Hopkins Medicine, 2022). Neurological conditions also carry a risk for depression due to the overlap of neuropsychological physiology that includes neurotransmitters that increase or subdue the severity of depression and pain (Hart et al., 2018). Just as with all chronic pain conditions, neurological conditions carry a risk for depression and require psychological

interventions. Chronic pain providers that use an assessment like the PHQ-9 to screen all patients for depression, regardless of the pain conditions, must provide referrals for psychological interventions for patients who score in the clinical range for depression.

Research Question Two

Research Question 2: What percent of all patients in the participating pain clinic are treated with opioids versus those not treated with opioids?

Research question two focuses on the number of patients treated with opioids versus patients not treated with opioids. The results found a small percentage of favor for the null hypothesis, with over 50% of all patients treated with opioids compared to the 48.76% of patients not treated with opioids. Finally, it was not known for 1% of patients if they were treated with or without opioids. Differences across the three groups were not statistically significant regarding as the scores were so close to 50%. The outcome of the data was surprising in that it was expected that most patients attending a pain clinic would be prescribed opioids. Still, the data is useful in various ways, one way being to dispel stereotypes and stigma surrounding chronic pain management.

Opioid use, misuse, and abuse are major health issues affecting many people in the United States (McCoy, 2016). Opioids are still the quickest way to alleviate pain, yet the addiction potential and adverse side effects remain considerable and potentially long-lasting. Opioids are among some of the oldest medications used in healthcare. However, their notoriety climbed in the 1990s at the beginning of the opioid epidemic (United States Department of Health and Human Services [HHS], 2021). At the time, drug manufacturers were developing and putting new opioids on the market without alerting

prescribers of the danger of use (Meisenberg et al., 2018). The new drugs were seen as miracle drugs and prescription rates skyrocketed. As more and more prescribers became aware of the dangers of opioids and the number of prescriptions slowed, many patients were already at risk (HHS, 2021).

With the pain epidemic on the rise, research about chronic pain, addiction, and opioids, increased. It was already known that pain management techniques that included a biopsychosocial approach were more successful than techniques without these techniques (Nichani et al., 2017). As a result, the number of multidisciplinary chronic pain clinics rose because of the complex nature of treating chronic pain. Along with the high numbers of chronic pain patients, was the number of patients who were suddenly without opioids. Instead, interventions such as injections, nerve blocks, nerve ablations, implantable devices such as spinal cord stimulators, psychological therapy, and social adjustments are recommended, and devices to block pain signals have become the norm (Himami, 2019). Implementing and ensuring guidelines for depression screening can add to the safety of opioid use. When monitored closely for appropriate use, opioids can be life-changing in positive directions (Hinami, 2019).

As technology advances, the use of interventional techniques is rising (Himani et al., 2019). Interventional techniques include various types of spinal and joint injections, nerve blocks, nerve ablations, and implantable devices such as spinal cord stimulators (Himani, et al., 2019). Conversely is the use of prescriptions of opioids. Many areas in the United States have implemented prescription monitoring programs, and the number of opioid prescriptions has decreased significantly (Al Achkar, 2017). Still, there is a use for

opioids in the management of chronic pain. There are some patients who are not able to pursue other treatments because of insurance, financial, or physical barriers. Many chronic pain patients note that without opioids, they would be unable to perform their everyday activities or provide for themselves and their families (Lugg, 2021). These situations may lead to existential crises (Al Achkar, 2017).

The literature finds that when treatment of chronic pain addresses biological, psychological, and social concerns, the pain is better managed (Bowen, 2021). Chronic pain, and the treatments used for these conditions, such as opioids, are linked to biological, psychological, and social problems that concomitantly occur (Dezutter et al., 2016). As of 2019, chronic pain patients are the highest number of patients treated with opioids and are at a significant risk for negative biopsychosocial effects (Dahlhamer et al., 2019). These effects include opioid induced hyperalgesisa, addiction, depression, and social isolation (de Siqueria, 2018; Wall, & Chauhan, 2018). Additionally, as revealed by Gauthier et al. (2019), when chronic pain and opioid management are treated in a multidisciplinary institution success rates are significantly higher. Therefore, addressing the biopsychosocial needs of all chronic pain patients, despite treatment type, can prevent or improve existential crises, especially if monitored in a multidisciplinary context (Dahlhamer et al., 2021).

Literature Review Topics Related to Research Question 2

The results of research question two inform the topics listed in the literature review. First, they endorse the findings of the research that reiterates that chronic pain raises the risk for opioid addictions and depression, both of which are drivers in the

opioid epidemic (Bryan et al., 2017). Extracted from the literature are the links between chronic pain, depression, opioid use, overdose, and suicide (Bryan et al., 2017). Extracted from the results of this study, is the knowledge that just over half of all patients in the participating pain clinic were treated with opioids despite the guidelines being unclear to inform pain providers and patients when to prescribe opioids. For instance, many patients with chronic headaches and fibromyalgia believe that opioids will take away or manage their pain (Centers for Disease Control and Prevention [CDC], 2022). Pain providers who are not educated on the appropriateness of opioid use and neurological conditions, may be doing more harm than good when they write prescriptions for opioids for these conditions (CDC, 2022).

Chronic pain and opioids increase the risk for depression significantly. Assessing patients with chronic pain for depression with a simple measure such as the PHQ-9, even patients who do not use opioids, is critical in reducing the number of individuals who fall prey to the opioid epidemic. Furthermore, the data suggests that regular screening, meaning monthly at in-office medication checks, will provide a safeguard for patients and providers by identifying patients who are struggling with depression. In turn, regular screening may benefit opioid users by preventing injuries, overdose, and suicide (Bryan et al., 2017). From the viewpoint of psychological interventions, not only are pain providers addressing the biopsychosocial stressors of chronic pain and depression, but they are making an effort to decrease the effects of the opioid epidemic (Dowell et al., 2016). In this sense, when psychological interventions are introduced into the pain

management plan, especially when the patient is treated with opioids, the severity of

these stressors and the risk of overdose and suicide may decrease (Bérubé et al., 2017).

Research Question Three

Research Question 3: Is there a relationship between PHQ-9 scores and patients

treated with opioids compared to non-opioid treated patients in a pain clinic?

Regarding research question three, the results were not statistically significant.

The use of opioid prescription medications was not significantly associated with PHQ-9

scores. Here, the null hypothesis was not rejected. A significant statistical relationship

between PHQ-9 scores and opioid use was not revealed. These findings are somewhat

surprising because of the increased risk of depression, overdose, and suicide in patients

with chronic pain noted in the research literature (Kosson et al., 2018).

Research question three was informed by research conducted by Adams and Turk

(2018). These researchers suggested that gaining a better understanding of the interaction

of depression and chronic pain would guide the assessment, identification, and treatment

of depression. Correlating with the biopsychosocial model of treating chronic pain,

Adams and Turk (2018) noted that chronic pain impacts all domains of functioning.

Identifying how these domains influence the biopsychosocial aspects of a patient's life is

critical to consider when treating chronic pain. Specifically, the authors found that

patients endorse depression as the most reported mental health complaint associated with

chronic pain (Adams & Turk, 2018). The research conducted by Breeden and Rowe

(2017) demonstrated that some portions of the brain that were activated in the presence of

pain were also activated in the presence of depression.

Along with the biopsychosocial model, research question three addressed the existential nature of chronic pain. As many patients reported their experience with chronic pain as life-changing, it is reasonable to expect existential crises to occur. Andersen et al. (2020) conducted a systematic review to explore how pain providers address existential needs when communicating with chronic pain patients. The review found a higher incidence of patient dissatisfaction when their pain providers did not address existential needs (Andersen, 2020). The leading facilitator of dissatisfaction was the provider's lack of willingness to openly listen with empathy to their patient's existential concerns (Andersen, 2018). A conclusion that can be made from the findings of research question three and Andersen's study (2018) is that assessing chronic pain patients with the PHQ-9 and reviewing these scores at the office visit can initiate a conversation between the provider and patient about the patient's psychological needs.

A statistically significant association between higher PHQ-9 scores and patients treated with opioids was not revealed in the current study. Specifically, findings did not indicate a significant relationship between treatment with opioids and PHQ-9 scores. Still, the findings are relevant to pain providers and pain patients. Engel (1977) expanded the conceptual paradigm between chronic pain and psychiatric illness in the 1970s. Engel realized that the most effective way to manage chronic pain was to recognize the biopsychosocial effects of chronic pain and discuss these needs with the patient (Fishman et al., 2010). Engel proposed that the most effective way to treat chronic pain is with multidisciplinary care (Engel, 1977). Offering care that includes biological approaches, psychological treatment, and social considerations improves the patient's quality of life.

As reviewed in the literature and related to research question three, the results of this study conflict with multiple studies that clearly show a relationship between depression, opioid use, and chronic pain (Dahlhamer, 2019; de Siqueria, 2018; Gauthier et al., 2019; & Wall & Chauhan, 2018). In comparison, the results of this study do not suggest that patients with chronic pain who are treated with opioids compared to non-opioids, have significantly higher PHQ-9, indicating greater depressive symptoms. Although there are limitations to this study, the research and the PHQ-9 scores recorded in this study, find that patients with chronic pain, are also struggling with depression. These results still support screening patients with the PHQ-9, regardless of their treatment type. This adds to the support of treating the biological aspects of chronic pain, addressing the existential concerns of patients with chronic pain, and using a multidisciplinary approach to treating pain.

Literature Review Topics Related to Review Question 3

Research question 3 explored a relationship between PHQ-9 scores and patients treated with opioids compared to patients not treated with opioids at the participating pain clinic. The results found in this study were surprising because high PHQ-9 scores were not significantly associated with opioid use. A hypothesis of this study was that opioid users would have higher scores on the PHQ-9 because of the prevalence of depression in chronic pain patients especially when those patients were treated with opioids. This hypothesis was informed by a significant amount of research that associated chronic pain, opioid use, and depression. According to Feingold et al (2018), opioid treated patients had higher trends of depression than those not treated with opioids.

The literature review for this study identified significant gaps in the previous literature related to pain clinics and depression screening (Kosson et al., 2018). With 100 million Americans reporting chronic pain and 40-50% of these patients also reporting depression, it is imperative for chronic pain providers to understand how they can educate and inform patients on the biopsychosocial stressors that come with chronic pain (Goldenberg, 2020). Other research found that overdose and suicide were risk factors for patients with chronic pain, depression, and opioid use (Ashrafioun, 2017). Therefore, even if the results of the current study did not support a relationship between PHQ-9 and opioid use, the results of the PHQ-9 collected in this study find that patients with chronic pain also struggle with depressive symptoms. Thus, study findings support the necessity to continue to provide psychological interventions for all chronic pain patients. This may be especially true for neurological conditions where opioids are contraindicated due to opioid-induced hyperalgesia, fibromyalgia, and chronic headaches (CDC, 2022; Wall, & Chauhan, 2018).

The data generated from research question 3 also informs all professionals managing acute and chronic pain patients about the need to clarify and standardized opioid prescribing guidelines. Because it is clear that many chronic pain patients struggle with opioid use disorders, and because opioid use and suicide rates increased during Covid-19 pandemic, the need for new guidelines is urgent. Opioid addictions, overdose, and suicide have risen dramatically since the beginning of the Covid-19 pandemic in 2020, as much as 40% (Overdose Detection Mapping Application Program, 2020). The opioid epidemic at that time became even more daunting as individuals lost their jobs and

medical insurance, or they were unable to access medical care for medication management and refills (Alter & Yeager, 2021). The ability to screen chronic pain patients for depression was further compromised during the pandemic due to less face-to-face service and the rush for new technological services.

Research Question Four

Research Question 4: Is there an association between PHQ-9 scores, opioid-treated compared to non-opioid patients, and the number of mental health referrals generated?

Research question four explored the association between PHQ-9 scores, opioid versus non-opioid treatment, and mental health referrals. It was based on the aspirational hope that all patients with clinically significant depressive scores would receive a referral for mental health services.

The question also evaluated an association between higher PHQ-9 scores and a mental health referral generation in patients treated with or without opioids. The results found that a referral for mental health services was not statistically associated with the PHQ-9 scores in opioid versus non-opioid treated patients. In other words, the number of mental health referrals was not associated with PHQ-9 scores. This is seen in the lack of mental health referrals that were generated for patients who scored high on the PHQ-9. Furthermore, the results did not find a relationship among patients treated with opioids versus those not treated with opioids and high PHQ-9 scores.

Research question four was the foundation for this study. The overarching goal was to narrow the gap in the prior research about depression screening and the number of

mental health referrals generated based on the level of depression measured. An abundant amount of research chronicling chronic pain was found during literature review. An adequate amount of research on opioid use was also readily available. What was lacking was research focused on pain clinics, depression screening, and mental health referrals. Also lacking was the literature on how pain clinics screen chronic pain patients for depression. The existing research lacked studies incorporating the existential nature of chronic pain and chronic pain management.

Literature Review Topics Related to Review Question 4

At the crux of this study are the results of research question four and alignment with prior research in this area. Research question four addressed all elements of this study, PHQ-9 scores, opioid treated compared to non-opioid patients, and the number of mental health referrals generated. Prior research in this area led the research to hypothesize that there would be an association between mental health referrals and PHQ-9 scores because of the comorbidity between depression and chronic pain (Ashrafioun, 2017). Although the amount of research on the topic was minimal, the limited research suggested there would be an association between patients treated with opioid versus non-opioid treatment, and mental health referrals (Nichani et al., 2017). When considered all together, the research suggested that chronic pain patients treated with opioids, would be more prone to depression, and at a higher risk for overdose and suicide then patients not treated with opioids (Bisby et al., 2022). What was not known was the number of mental health referrals that were generated between the variables.

The data from this study did not reveal a statistical association with PHQ-9 scores and mental health referrals. The results also failed to reveal a statistically significant connection between treatment groups and mental health referrals. From these results, it can be suggested that PHQ-9 scores, treatment type, and the number of mental health referrals that were generated were not strong predictors of when providers are prompted to issue a mental health referral. These results are telling in that there is clearly a greater need for psychological interventions with chronic pain, regardless of their treatment type. Therefore, it is recommended that chronic pain providers consider PHQ-9 scores when giving mental health referrals to this population. In doing so, these providers may bridge the gap between unaddressed biopsychosocial stressors, the type of psychological interventions used in chronic pain, and the connection between chronic pain, depression, and suicide.

Additionally, the results may lead chronic pain providers to discuss more than just pain and the available types of treatments for chronic pain. Conversations about the connection between depression, chronic pain, and the risk of opioid use, may initiate the need for regular mental health screenings and mental health referrals. At the very least, it may prompt standardized policies and guidelines for pain providers to follow when prescribing opioids, and when to provide a mental health referral. Currently the guidelines for chronic pain treatment, are mostly focused on opioid prescribing practices related to opioids but do not include provisions about mental health referrals (Dowell, et al., 2016). Even with updated guidelines, the need for clarification is necessary because of the high numbers of overdose injuries and deaths, and suicides among the chronic pain

community. Best practices with pain patients that incorporate all considerations, depression screening, treatment types, and when to generate a mental health referral, are necessary.

Summary of Interpretation of the Findings

This study was in line with recommendations made by the authors in the literature review regarding depression screening in patients with chronic pain (Bohjner, & Ilgen, 2019; Kroenke, 2021; Rogers, et al, 2021). The literature clearly indicated that it is necessary to screen patients with chronic pain for depression. Screening patients with a tool that has proven internal and external validity is also necessary. Standardization of the intervals at which patients are screened is essential to gaining consistency of tracking and follow-up for depression related to chronic pain treatment, especially with opioids. There is a need to address the lack of knowledge about how a positive score for depression can support generating a mental health referral for these patients.

Previous literature identified the need to understand the depression scores in patients treated with opioids compared to those not treated with opioids due to the increased risk for depression, overdose, and suicide in patients with chronic pain (Petrosky et al., 2018). Chronic pain is not ageist, gender biased, or racially exclusive— indeed, pain impacts society as a whole (Raffaeli & Arnaudo, 2017). Pain clinics with diverse populations are relevant in widening knowledge about specific groups and chronic pain. Chronic pain patients are sometimes screened for depression and then provided with a mental health referral when scores are indicative of depression.

Multidisciplinary pain clinics are an opportune setting to screen patients for depression, given that pain patients are the focused population.

The results of this study suggested, along with much previous research, that many chronic pain patients struggle with depression. The number of patients with a level of mild depression and above was 173 compared to 91 patients whose score indicated no depression. Using a tool that adequately measures depression is crucial to obtain the most accurate results. The PHQ-9 is a proven measure to screen for depression accurately and efficiently. Although the findings in this clinic suggested no correlation between PHQ-9 scores and opioids versus non-opioid treatment, the literature clearly states that the rates of depression, overdose, and suicide are higher in patients treated with opioids.

Screening pain patients at the initial and subsequent visits did identify depression and allowed for tracking of the degree of depression. A benefit of this knowledge may be to incite conversations between providers and patients about the existential issues that arise from chronic pain. In screening all patients at every visit, more patients can be diagnosed and treated for depression earlier than if screening it is done at random or longer intervals. In turn, this could decrease the number of deaths from overdose and suicide in patients with chronic pain. Providing patients whose PHQ-9 score ranges from moderate to severe range of depression should be offered a referral for mental health services. Addressing the biopsychosocial needs of all patients with chronic pain is an effective way to treat this unique population. Discussing existential concerns is a way to mitigate crises before they begin. Multidisciplinary clinics offer treatments that address chronic pain's biopsychosocial structure and existential nature.

Comparison With Literature Reviewed

Most notably, this research found that although not every patient was screened for depression at their initial visit, most patients were administered the PHQ-9 at least once and many patients were administered the PHQ-9 at every visit. As hypothesized, slightly over half of all patients in the participating pain clinic were recorded to have been treated with opioids versus other pain medication regimens, although the results are not at a level of significance. No relationship was found between PHQ-9 scores and the number of patients treated with opioids versus those not treated with opioids. Additionally, the was no association among the PHQ-9 scores, opioid versus non-opioid treatment, and the number of generated mental health referrals based on the PHQ-9 scores.

Findings Related to Assumptions

Results for the current study were not consistent with study hypotheses or prior research in this area. Specifically, it was hypothesized that depression screening would be lacking among patients, but this assumption is untrue. In fact, most patients were screened for depression at least once. This is especially true if they are treated with opioids to monitor their progress and manage medications. Another assumption was that most of the patients in the clinic would be treated with opioids rather than other medication regimens. This assumption was also untrue. The number of pain patients treated with opioids was slightly over half (50.8%) and the number of patients treated without opioids was (49.2%). The gap between opioid and non-opioid patients closes when the number of patients where treatment type was unknown (1%) was added to non-

opioid treated. Essentially, the number of patients who are treated with opioids compared to those not treated with opioids was almost equal.

A third assumption was that there would not be a relationship between patients treated with opioids compared to those not treated with opioids, and PHQ-9 scores. This assumption was developed based on the literature and previous literature that correlates the connection between chronic pain and depression. The analysis supported the null hypothesis in this situation, patients treated with opioids did not have higher scores on the PHQ-9. This was an unexpected result in light of the research indicative of the strong association of chronic pain and depression.

A final assumption was that there would not be an association between PHQ-9 scores, treatment with opioids, and the number of mental health referrals generated. This is important to researchers and providers who treat chronic pain. Ultimately, the results did not show a statistically significant relationship among PHQ-9 scores, treatment with opioids compared to non-opioid treatment, and the number of mental health referrals that were generated based on the scores or treatment type.

Furthermore, the findings from this study address the predicted assumptions of this study. The first assumption was that chronic pain providers understood that their patients are highly susceptible to depression. The data collected in this research was clear about the association between depression and chronic pain. This assumption was correlated to the study findings, where half of all patients were screened for depression. The second assumption, providers understand how to use and score the PHQ-9, was not supported by the number of mental health referrals initiated. Specifically, statistical

analyses revealed that not all patients received a mental health referral, even when their PHQ-9 scores were clinically significant.

A third assumption assumed that patients understood the PHQ-9 and answered all questions honestly. It may be that patients were not comfortable opening up to their providers at the initial visit. Because of the social pariah encompassing chronic pain, pain patients may be reluctant to disclose the severity of the depression they experience. Added to this assumption is the stigma associated with depression, chronic pain, and opioids, and patients fearing they present as drug seeker if they score too high. There is also the possibility that patients who scored lower for depression were not in as much pain as someone with a higher score.

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Limitations of the Study

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This study includes several limitations that should be considered when interpreting the results. First, the findings are not generalizable to all populations. Indeed, data collected was from one pain clinic in the Midwest and is not representative of all geographical/regional locations across the United States. Adding pain clinics around the United States would narrow this limitation and provide more generalization for the population. There are also demographic limitations regarding age, gender, and race. These limitations could indicate that the sample does not represent a generalization of all age ranges, gender identities, and races. As such, future research should include samples with even greater gender and racial/ethnic diversity (e.g., transgender identity, Native/Indigenous populations).

A study that focused on age groups with the highest number of chronic pain patients may have provided information for the prevention, intervention, and treatment of, chronic pain within these groups. Studies comparing groups of gender identities such as agender, bigender, cisgender, gender fluid, gender variant, non-binary, third gender, transgender, other, and male and female, may also be beneficial (Zambon, 2022). The results of these studies may improve the lack of knowledge in demographic variables that are emerging as the norm. It would be interesting to log the trends and patterns in the gender groups as gender identity is addressed and changing in the current times.

An important finding from this current study was the relative lack of racial/ethnic diversity in the study sample. Specifically, White/European American individuals were the most represented group at 48.7%. The second largest racial group in the sample was individuals who declined to specify their racial/ethnic identity (31%). Although a certain lack of representation is expected because of the geographical location of the sample, the specific lack of racial/ethnic diversity in the sample is notable. While there are studies that do compare and contrast chronic pain within racial groups, this knowledge is still limited. As technology advances and communication methods become more readily available and affordable, there has been an uptick in assimilation within many different cultural intersects. Understanding these cultural intersects in terms of chronic pain, may add to the evolution of knowledge about chronic pain.

It must be noted that this study includes data from a span of only two years. Because this study is not longitudinal, there are related time limitations. Data from five or ten years would add depth to the research. A longitudinal data set would be ideal for

noting any period or generational differences. The PHQ-9 is a suitable measure of depression, yet a study that used various tools would be less limiting. A final thought to limitations is the limiting nature of self-report measures; including objective measures may reduce the chance of erroneous results.

Another note about the findings of this study is the unique time in which the study took place. At the end of 2019 through 2021, the Covid-19 virus was being diagnosed at alarming rates (de Moraes et al., 2021). During this time, patients with chronic pain were having difficulties receiving regular treatment (de Moraes et al., 2021). Many pain clinics require patients to be seen on a monthly basis for progress checks and medication refills but stay-at-home restrictions and fear of contracting the virus made it difficult for these patients to obtain the care they required (El-Tallawy, et al., 2020). As a result, more and more pain providers were utilizing telemedicine to treat patients with chronic pain (El-Tallawy et al., 2020). Because the study took place in such unprecedented times, the results of this study are unique to the period and do not adequately reflect historical pain management prior to this time.

Recommendations for Future Research

There are several recommendations for future research and policy? based on the current study's findings. First the recommendations for research are to evaluate the descriptive statistics further. For instance, while it is often assumed that older patients are among the highest group to have chronic pain, identifying the truth to this assumption may be worthwhile. Identifying differences in age groups may provide insight in prevention and the treatment of chronic pain. The same can be recommended for how

people identify their gender and race. Noting differences among the gender groups and racial groups may provide information about patterns and trends as well as inform specialized prevention, alternative medicine pain management, and/or intervention.

Second, the recommendation for research is to further test the association between depression and mental health referrals among chronic pain patients. This recommendation is supported by the prior research in this area. Specifically, pain clinic providers are often aware of the association between depression and chronic pain (Cosio & Meshreki, 2017). However, there is a lack of knowledge regarding the number of mental health referrals provided by pain providers. If such information were available, it could inform policy change and health initiatives to make the provision of mental health referrals and a suicide screener, standard practice of patients who score from moderate to severe for depression and positive for suicide. Thus, future researchers and advocates could move the field forward and would help to meet the unique and crucial mental health needs of chronic pain patients.

Third, prior to the covid pandemic the standard process for this pain clinic was to screen all patients with the PHQ-9 at every visit. The pandemic however, interrupted the standard process of screening every patient at every visit because of the transition of most visits to telehealth visits. Telehealth, relatively new to the clinic, the providers, support staff, and patients, was sometimes difficult to navigate. Because telehealth took more time to use, especially at the beginning of the pandemic, the amount of time for appointments was often decreased. The number of patients who would have normally

been screened with the PHQ-9 was predicted to be considerably different than prior to the pandemic.

This data extracted for this study was during the beginning of the pandemic and at the height of the pandemic between 2019-2021. Research before 2019 and after 2021, would provide important information about depression screening of pain clinic patients, prior to the pandemic, during specific dates during the pandemic, and after the pandemic. This data could show trends in depression screening during these specific times. It could also provide information to show how the Covid pandemic influenced depression levels in already at risk, individuals. A study that delineated periods prior to 2019, during the pandemic, and after, could potentially inform pain clinic providers on the impact of Covid on pain patients.

The literature on chronic pain is expansive and rich in certain areas. Research dedicated to gender indicates that more women than men seek treatment for chronic pain and depression (Pope et al., 2021). Gender studies that categorize all gender groups, including binary and nonbinary individuals, would add to the scope of research dedicated to the intersection of gender and the treatment of pain and depression. Regarding age, older individuals are more prone to chronic pain because of the natural degeneration that occurs over the aging process (Pope et al., 2021). However, in recent years, younger individuals have been increasingly diagnosed with chronic pain (Pope et al., 2021). However, future research is needed to parse age-related influences on the experience and treatment of chronic pain, especially as stereotypical pain patients become younger. Regarding potential differences across race, future research is needed to

understand how the experience and effective treatment of pain may differ across race. Finally, there is a need to further examine how pain treatment and mental health (e.g., depression) interact in the context of pain clinics. Indeed, patients utilizing opioids are highly researched (Fishman et al., 2010), but studies that include patients not treated with opioids and depression screening are sparse. Thus, there is a plethora of needed research in the area of pain and depression in the United States.

Results for research question one regarding the intervals, or how often depression is screened among pain patients, revealed that most patients were screened at least once at the initial visit and often at all visits. A study using the charts of patients screened at all visits or at specific intervals may generate information to initiate more informed discussions about depression screening guidelines.

Results of research question two revealed that half of all patients in this research sample were treated with opioids. These patients were compared to patients not treated with opioids and with unknown treatment types. A study that evaluated just the scores of opioid-treated patients may yield specific data sets and outcomes for that at-risk population.

The logistic regression for research question three found the results not statistically significant; PHQ-9 scores were not associated with opioid use. A study aimed at identifying relationships between PHQ-9 scores, the severity of depression, and opioid use could further educate providers about these association.

As the logistic regression in research question four was statistically insignificant, the relationship is unknown between PHQ-9 scores, opioid use compared to non-opioid

use, and the number of mental health referrals generated. A study comparing PHQ-9 scores to the number of mental health referrals alone may show further inform providers regarding current practice as compared to best practice responses to the presence of evident depression. A study following up on depression levels after the mental health referral was pursued is another area of research that deserves more attention.

Implications

Chronic pain is a debilitating and costly condition affecting half of the United States population. Depression is a comorbidity coupled with chronic pain, which is harmful and deadly. These conditions alone change how individuals perceive themselves, their purpose, and their existence. Many individuals with chronic pain are prescribed opioids. With the rise of the opioid epidemic in the 1990s, more and more patients with chronic pain were referred to pain clinics dedicated to managing chronic pain. Pain clinics employ specialists that treat patients with one or more modalities to improve the quality of life for these patients.

From an individual standpoint, chronic pain is life changing. Patients who once could care for themselves may find they can no longer perform their activities of daily living. Where they once could feed or groom themselves, now they rely on others to meet their basic needs. If they experience depression along with the painful condition, their level of ability or motivation may lag. When ability and motivation are reduced, the quality of life can be impacted. Individuals with chronic pain and depression may find themselves turning down social engagements and withdrawing from their communities.

Chronic pain impacts not just the individual suffering from it; it can affect entire families. Individuals afflicted with chronic pain may have injured themselves on the job. Age, injury, and illness are other common factors in the genesis of chronic pain conditions. Regardless of how it began, the symptoms may affect the abilities of the afflicted person. Maintaining consistent employment may prove to be complicated. Many patients with chronic pain struggle with financial difficulties. People who were the sole providers may find they no longer have a stable income. Families of chronic pain patients may suffer due to the lack of income. Primary caregivers may have to seek employment outside the home, which can add expenses like daycare, in-home supportive services, and more. In addition to the financial burden of pain, family members may develop anxiety or depression due to changes in family dynamics. Many people with chronic pain experience feelings of inadequacy which may lead to irritability, sadness, and anger. Emotional instability is one of the most common complaints reported by caregivers of chronic pain. If left unrecognized or if the individual does not seek help, it can result in the breakdown of the family system.

The economic effects of chronic pain are significant, but the cost to society is enormous. The laws and guidelines related to chronic pain cause turmoil in many patients. Prescribing guidelines have changed how patients are treated for their pain. Insurance companies dictate what treatments patients can use. Regional areas not as technologically up to date as others may not offer newer, more effective ways to treat pain. The opioid epidemic has caused significant loss and devastation to many.

Increasing the knowledge and educating professionals, individuals, and loved ones affected by chronic pain can improve the perception of chronic pain and chronic pain patients. Decreasing stigma about chronic pain, depression, and opioids, may lead to more patients seeking care. Meeting the needs of the whole patient, physically, emotionally, and socially, may lead to managed pain symptoms. Assessing patients for depression as early as possible may reduce chronic pain's potential emotional side effects. Addressing the existential concerns of patients with chronic pain may decrease existential crises, increase self-awareness and purpose, and improve conversations between providers and patients. Providing multidisciplinary options for patients may enhance their quality of life.

Conclusion

The prevalence of chronic pain in the United States is at epidemic proportions. Depression is a comorbidity that affects more than half of all individuals with chronic pain. Chronic pain and depression, alone or together, increase the risk of opioid abuse, overdose, and suicide. In the 1990s, newer opioids were introduced and thought of as a miracle solution to chronic pain. Providers and patients were not immediately made aware of the potential adverse effects of the newer opioids, including death. When they became aware, providers decreased the number of prescriptions for chronic pain patients.

Providers who managed pain conditions in the past were referring more and more patients to specialized pain providers. The number of pain clinics that only prescribed opioids or those that offered multidisciplinary options was more widespread. Still, the number of patients prescribed opioids was considerable. Individuals whose dose was

reduced or who were taken off opioids altogether were seeking other options to obtain opioids. Heroin, illicit opioids, and non-regulated drugs were sometimes the only option. Addiction was rising, overdoses were more prevalent, and incidences of suicide surged.

As the most common comorbidity of chronic pain, depression should be screened when treating patients with chronic pain. The intervals, or how often depression screening is recommended is not well established. There are many tools by which patients can be screened for depression, including the Patient Health Questionnaire-Nine, which consists of nine questions related to the DSM-5 criteria for clinical depression. Many pain clinics screen patients for depression, and some provide mental health referrals. Unfortunately, the guidelines to which patients are referred for mental services are not well defined.

This study revealed that patients are screened for depression with the PHQ-9, starting at the initial visit. Screening occurs at regular intervals, and the scores are recorded. More than half of all pain clinic patients were treated with opioids, while patients not treated with opioids were close behind. Although a relationship between the PHQ-9 scores of patients treated with opioids was not found, the outcome revealed that all chronic pain patients would benefit from depression screening. An association between PHQ-9 scores, opioid treated compared to non-opioid treated patients, and the number of mental health referrals generated based on the PHQ-9 score was also not established. The results provide information that can improve the screening for depression and quality of life in chronic pain patients and inform providers about guidelines regarding depression screening and mental health referrals.

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