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Effectiveness of a Nurse-Led Songwriting Intervention on Quality of Life for Individuals with Chronic Pain

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Abstract

Chronic pain affects 20% of the U.S. and global population. With the worsening opioid crisis there is a growing need for alternative therapies. Individuals with chronic pain often experience depression, stress, and poor quality of life. The Theory of Unpleasant Symptoms guided this prospective cohort design project in a pilot study (N = 13) examining the effectiveness of songwriting to improve quality of life in this population. A master's prepared nurse and experienced songwriter administered 6 weekly songwriting sessions in an online chronic pain support group. Chronic pain (Graded Chronic Pain Scale-Revised & Pain Enjoyment General Activities subscale), depression (Patient Health Questionaire-9), stress (Perceived Stress Scale), and quality of life (World Health Organization Quality of Life-BREF) were measured before and after the intervention. The mean PEG score pre-intervention was 20.54 (SD 5.32) and post-intervention was 17.16 (SD 6.78), t (12) = 3.29 $p < .01$. There was a statistically significant reduction in chronic pain from pre-intervention to post-intervention in PEG scores. The mean depression scores (PHQ-9) were unchanged from pre-intervention to post-intervention (8.85). Participants' mean stress scores (PSS) decreased slightly from pre-intervention, 20.15 (SD 7.47) to post-intervention, 19.46 (SD 7.9). There was a statistically significant increase in the participants' social health scores (WHOQOL-BREF) from pre-intervention 4.62 (SD 2.06) to post-intervention 7.9 (SD 2.47), t (12) = 9.54, $p < .001$. As their social support increased, so did physical and psychological health in this pilot study**.** The 13 participants expressed positive feedback about being with others they could identify with and learning a new way to cope with chronic pain.

Keywords: chronic pain, music interventions, quality of life, songwriting

Effectiveness of a Nurse-Led Songwriting Intervention on Quality of Life for Individuals with Chronic Pain

Chapter 1

Introduction

Pain is subjective and denotes discomfort or distress. It is influenced by the person's many layers of physical, psychological, social, and cultural experiences associated with unpleasant stimuli or past injuries (Jin, 2016; Wurtjatmkio, 2019). The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated to an actual or potential tissue damage" (Martin-Saavedra et al., 2018). Individuals experiencing chronic pain are at risk for anxiety, depression, and possible addiction to prescription or street drugs. Diagnosis and treatment of pain subject the affected person to substantial physical and financial demands. If it is not gotten under control or the cause discovered, the patient can become despondent and hopeless and suffer negative effects on mood, general health, and quality of life (Dai et al., 2021; Yong et al., 2021).

Chronic pain is defined as pain lasting for three plus months or longer than standard healing time (Dowell et al., 2016). The Centers for Disease Control & Prevention (CDC) reports that there are limited studies that estimate the prevalence of chronic pain in the United States. They estimate that it is between 11% and 40% (average of 20%) (Dahlhamer et al., 2018; Zelaya et al., 2021). Among adults with chronic pain, eight percent live with high impact chronic pain. High impact chronic pain is having substantial restrictions on life and work activities for longer than six months (Dahlhamer et al., 2018).

Chronic pain has been linked to abuse and overdose of opioids, depression, stress and anxiety, lessened quality of life, and poor feelings about personal health. Chronic pain is one of the most common reasons adults seek medical attention and is associated with lost work and low self-esteem (Hadi et al., 2018; Mental Health, 2022; Zelaya et al., 2021). Life with chronic pain is difficult and affects emotions and the physical body. The stress of ongoing pain can affect mood, behavior, and thinking. Sleep disturbances, inability to function at home and work, withdrawal from social life and hobbies, fatigue,

problems concentrating, and decreased appetite are common in individuals with chronic pain (Mental Health, 2022; Zelaya et al., 2021).

The cost of chronic pain in the U.S. is estimated at 560 billion dollars in direct costs of medical services, disability programs, and lost productivity (Dahlhamer et al., 2018). Zajacova et al. (2021) did a study on pain trends in the U.S. among adults aged 25 to 84. The prevalence of pain is escalating rapidly in nearly all population groups, especially for those at lower socioeconomic levels. The authors of this study found that alcohol use, psychological distress, heavier body weight, and arthritis were prominent correlates of pain (Zajacova et al., 2021).

Older adults experience and report more chronic pain than younger adults (Zajacova et al, 2021; Zelaya et al., 2021). More women than men report chronic pain. In most studies in the U.S., non-Hispanic whites have the highest prevalence of chronic pain. Asian Americans demonstrate the lowest occurrence of chronic pain in America. As a group, Native Americans and multi-racial individuals have the highest prevalence of chronic pain levels which could be because of lower socioeconomic status (SES). Racial minorities are less likely to report ongoing pain to their health care provider. Blacks and whites differ very little in chronic pain. Lower SES individuals report more chronic pain than those of higher SES. For adults whose family income was four times the poverty level in 2002, the study showed a 14% increase in the odds of pain. In 2018, adults whose family income was less than twice the poverty level experiences an increase of 40% in chronic pain (Zajacova et al., 2021; Zajacova et al., 2022).

Because of the opioid crisis, there is focused attention on nonpharmacological therapies to treat chronic pain. There is a growing body of evidence for the effectiveness of complementary alternative treatments for chronic pain. Psychological, physiological, and combinations of the two have been shown to be integral tools for a multimodal approach to pain management. Personal health and special circumstances like pregnancy affect which therapies work best for certain types of chronic pain. One approach that is safe and effective is music interventions (MI). MIs are classified as passive (music listening) or active (singing, songwriting, playing instruments) (Martin-Saavedra, 2018; NIH, n.d.; Thomas et al., 2016).

Purpose

Nonpharmacological therapies are needed to treat chronic pain and associated sequalae, depression, stress, and decreased quality of life. This project studied the effectiveness of a nurse-led songwriting intervention in decreasing chronic pain, depression, stress and improving quality of life in individuals with chronic pain.

Objectives and Aims

The aim of this study was to determine effectiveness of a nurse-led songwriting intervention to improve quality of life of individuals with chronic pain. This researcher posed the following clinical questions:

1. How did participants rate their chronic pain, depression, stress, and quality of life as measured by the Graded Chronic Pain Scale-Revised (GCPS-R), Patient Health Questionnaire-9 (PHQ-9), Perceived Stress Scale (PSS), and World Health Organization Quality of Life Brief (WHO-QOL BREF) pre-intervention and post- intervention?
2. What demographic factors were associated with a statistically significant difference in chronic pain, depression, stress, and quality of life pre-intervention and post- intervention?
3. Was there a statistically significant difference in the demographic variables, chronic pain, depression, stress, and quality of life pre-intervention to post-intervention?
4. What was the relationship between the demographic variables, chronic pain, depression, stress, to quality of life in the pre-intervention scores and the post-intervention scores?
5. How much of the variance in quality of life pre- and post-intervention was associated with the demographic variables, chronic pain, depression, and stress?
6. What comments and suggestions did participants have about the intervention and for improving it for future use?

Theoretical Model

Individuals with chronic pain experience a wide variety of symptoms that can lead to disruption in activities of daily living. They may range from bothersome to excruciating and are not always

predictable. Many symptoms are debilitating and can cause the person to spiral downward as coping skills diminish. Physical symptoms affect the psyche and psychological symptoms often affect the body. The social and physical environment also are involved with the chronic pain patient's symptom experience. The author chose a theory that incorporates the relationships that symptoms have with the whole person, mind, body, and emotions (Mental Health, 2022; Srivastava et al., 2021; Zelaya et al., 2021).

The Theory of Unpleasant Symptoms (TOUS) is a holistic middle range theory developed in 1995 by Elizabeth R. Lenz and Linda Pugh. There are three major concepts: 1. Factors influencing the symptoms (physiological, situational, and psychological); 2. Symptoms experienced by the patient (four dimensions of timing, intensity, quality, and distress); and 3. Performance or consequences of the symptom experience (Srivastava et al., 2021).

Physiological symptoms involve the normal function of body systems, the presence or absence of disease, and the individual's energy level. Psychological symptoms are the result of the individual's state of mental health and their reaction to illness. Situational factors arise from the individual's physical environment (sound, noise, light, air, and water quality, etc.) and social environment (employment, healthcare access, lifestyle behaviors, support of friends and family). Symptoms can be influenced by both types of factors (Srivastava et al., 2021).

In TOUS, outcomes are incorporated in terms of performance or consequences, how the symptom(s) experience affects the individual. Symptoms can affect an individual's performance of daily activities, may cause deterioration in cognition, and decrease quality of life. Symptoms are multidimensional and are intertwined with one another. For individuals with chronic pain, a host of symptoms are often a reflection of the mental, physical, and emotional stress they face (Von Korff et al., 2020). Psychological factors, depression and stress were measured by the Patient Health Questionnaire 9 (Kroenke et al., 2001) and the Perceived Stress Scale (Measurement Instrument Data Base for the Social Sciences, 2022) respectively. The situational factor in this study, quality of life, was measured using the World Health Organization Quality of Life BREF tool (Harper & Power, 1998). These four instruments and scoring mechanisms can be found in Appendix A.

Chapter 2

Review of Literature

Pain management is best achieved by a multi-modal multidisciplinary approach (Yong et al., 2021). The multidisciplinary approach to the treatment of chronic pain came into play in the 1970's, spreading across Europe and the U.S. and remains the gold standard. Pain management programs differ, and the content is not standardized. Over time, there has been a shift to more behavioral-based programs and holistic care (Lewis & Mowat, 2019). Several complementary and alternative therapies have been studied and utilized that are effective but are not usually covered by insurance (Yong et al., 2021).

Management of chronic pain is a monumental challenge for providers and patients because an individual's pain experience is multidimensional (Hadi et al., 2018). Seventy percent of patients are dissatisfied with how their pain is managed (Fernandez-Castillo et al, 2021; Hadi et al., 2018).

Opioids are often prescribed for pain. One in five patients presenting to primary care seeking treatment for pain (excluding cancer, palliative, and end of life care) is prescribed opioids. These drugs can cause individuals to be vulnerable to abuse, addiction, overdose, and death (Dowell et al., 2016). The CDC reported in 2015 that there were 52,404 deaths from overdose: 33,091 involved opioids (Seth et al, 2016). In 2020, CDC (2021) research revealed 100,306 deaths from overdose and 76,673 involving opioids. Opioid use in chronic pain is linked to anxiety, depression, abuse and overdose of opioids, and poor quality of life (Mental Health, 2022; Yong et al., 2021; Zelaya et al., 2021).

Music Interventions

Due to the opioid crisis, there has been increased focus on alternative therapies to address chronic pain. Nonpharmacological treatment and non-opioid medications are the favored strategies according to the CDC Guidelines for Prescribing Opioids for Chronic pain – U.S. 2016 (Dowell et al., 2016). Alternative or nonpharmacologic methods include biofeedback, distraction, guided imagery, acupuncture, neurological stimulation, physical interventions, and comfort interventions. Music interventions (MI) is a form of comfort therapy. It is an effective therapy in individuals with autism, pain, dementia, depression, anxiety, stress, and other diseases and conditions (Bradt et al., 2016; Ciergici et al., 2019; Dai et al.,

2020). Music therapy was added to the Diagnosis Related Groups (DRG) listing for multimodal clinical pain treatment in 2017 (Denecke, 2017).

The American Music Therapy Association defines music therapy (MT) as "the use of music by a certified professional (having completed an approved music therapy program) for the accomplishment of specific therapeutic goals" (Martin-Saavedra et al., 2018). MT can be passive or receptive which entails the patient receiving the treatment, such as listening to vocal or instrumental music. Active MT is comprised of singing, songwriting, or playing an instrument. MT significantly decreases pain and anxiety in acute (surgical and procedural) pain and in cancer patients (Martin-Saavedra et al., 2018). Howlin & Rooney (2020) found that MT was effective in reducing pain and anxiety in chronic illness and cancer as well as individuals having invasive procedures.

Music therapy may be administered effectively by experienced nurses as an alternative treatment for those who experience chronic pain (Howlin & Rooney et al., 2020; Cigerci et al., 2019). In healthcare when treatments involving music are utilized by professionals not certified in music therapy, the term "music interventions" applies. Music interventions are used to improve quality of life, manage pain and other symptoms, promote well-being (including spirituality) and promote physical and psychosocial function (Robb et al., 2018).

Active and passive music interventions (MI) are effective in reducing stress and pain of chronic illness. Specifically, decreases in heart rate, blood pressure, use of anesthetic and opioid medications were reported along with lower numbers on the numeric pain scale being reported (Jin, 2016). Music has a good sedative effect and relieves pain by distraction, and it positively affects the emotions. It is safe, economical, and simple to use (Dai et al., 2020). Chai et al. (2017) studied music as a complementary intervention to opiate medications. Streaming or digitized music via smartphone combined with automated discovery algorithms can create personalized playlists patients can use themselves to manage pain. MI have been used in a variety of healthcare settings as an effective adjunct treatment modality (Bradt et al., 2016; Ciergici et al, 2019; Dai et al., 2020; Howlin & Rooney, 2020; Wurjatmiko, 2019).

Songwriting

Songwriting as an active music intervention helps the person process life experiences, relieve stress, and express themselves. Writing a song assists the client to develop a sense of self and externalize fantasies, emotions, and thoughts. The finished product reminds them of their internal sources of strength and their achievements (Eickholt et al., 2022). Writing songs does not required the client to have a musical background. Songwriting creates a sense of being heard and helps the writer and the listener. Songwriting allows emotional release and personal reflection. It gives ways to interpret difficult circumstances and overwhelming challenges (Crosse, 2021).

Demographics of Chronic Pain

Research has shown that the typical individual with chronic pain is female, 65 years of age or older, Non-Hispanic white, unemployed, and of a lower socioeconomic status. The variables of age, gender, race, ethnicity, employment status, and socioeconomic status as each relates to chronic pain are presented below.

Gender

Women are more likely to experience and report chronic pain than men (Dahlhamer et al., 2018). Women who have chronic pain tend to use coping strategies that are maladaptive. This puts them at greater risk of inferior functional ability and developing chronic pain. Females have a lower pain tolerance and threshold than males. Women experience pain at greater intensity and with more unpleasant symptoms than men. They also have been shown to experience greater chronic pain disability than men. These differences between genders can most likely be attributed to genetics and estrogen levels, but more research is needed (Dahlhamer et al., 2018; Mill et al., 2019; Mullins et al, 2022).

Age

The presence and reporting of chronic pain exist in a complicated interrelationship. The older a person gets, the more multi-morbidity increases. The more advanced in years, the greater the likelihood that the person has had an injury or been exposed to noxious stimuli that can signal chronic pain (Mills et al., 2019). Older adults are often hesitant to discuss their pain.

Dementia and cognitive decline hamper the recognition of chronic pain. Prevalence of chronic pain increases with advancing age. Thirty percent of individuals 65 or older in the U.S. report chronic pain. Chronic pain affects around 30% of adults 18-39. Chronic surgical pain is most often the type seen in children younger than 18 (Mullins et al., 2022). There is not much evidence in the literature regarding chronic pain in adolescents and children, but there is proliferative evidence that older people have greater prevalence of chronic pain than younger people (Mills et al., 2019; Mullins et al., 2022).

Race & Ethnicity

Chronic pain prevalence is greater in Non-Hispanic whites than Non-Hispanic blacks. Hispanic and Non-Hispanic blacks have lower odds for developing chronic pain, but they report more severe pain than Non-Hispanic whites (Mullins et al., 2021). Hispanics report less chronic pain than Non-Hispanic whites or blacks. Non-Hispanic Asians have the lowest prevalence of chronic pain. Native Americans and multi-racial individuals demonstrate more chronic pain prevalence as a group. In Native Americans this is thought to occur because of lower socioeconomic status. The phenomena is unexplained in multi-racial individuals (Dahlhamer et al., 2018; Mullins et al., 2022; Zajacova, 2022).

Socioeconomic Status

Socioeconomic status (SES) refers to a compilation of a person's employment status, income, and level of education. It is a crucial determinant for the prevalence and severity of chronic pain. It can predict the development of related sequalae like disability and mental health issues in chronic pain patients. There is a higher risk of chronic pain for individuals of lower SES (Prego-Dominquez et al., 2021). This connection is generalizable to all socioeconomic concepts and all chronic pain syndromes. Chronic pain is 100% higher in lower and median income countries as compared to higher income countries. Lower SES population groups generally report increased chronic pain and increased level of severity of chronic pain as compared to higher SES groups (Prego-Dominquez et al., 2021; Mills et al., 2019; Mullins et al., 2022).

Lower SES is associated with manual labor employment (Mullins et al., 2022). These type jobs put the person at higher risk of physical injury and stress on the job. Individuals and populations of lower

educational level are associated with chronic pain coping strategies that are ineffective, like “hoping for the best” and catastrophizing, or thinking the worst possible thing will happen after events or actions. Lower SES populations very often exhibit lifestyle factors that are unhealthy such as tobacco use, substance abuse, lack of physical activity, absence of social support or child abuse. The economic impact of chronic pain completes the cycle of the chronic pain-SES association making the situation perpetually worse (Dominquez et al., 2021; Mills et al., 2019; Mullins et al., 2022).

Individuals who are unemployed due to poor health or disability are at greater risk for chronic pain. Indicators associated with employment status and chronic pain include job satisfaction, inability to have job autonomy or do the work differently, fears surrounding return to work after an injury or a recurring injury and higher perception of the difficulty of the job.

Workers who hold manual labor jobs are more likely to report chronic pain. Lower income individuals and populations experience greater prevalence of chronic pain than those with higher income (Dahlhamer et al., 2018; Mills et al., 2019; Mullins et al., 2022).

Psychological Factors Associated with Chronic Pain

Chronic pain affects the person in multidimensional ways, not just in the physical sense. The psychological impact is immense and is beyond the scope of this study. The evidence shows that depression, stress, and decreased quality of life are commonly associated with chronic pain and will be discussed below.

Depression

Chronic pain is associated with depression and chronic pain patients with depression are more likely to have worse outcomes with chronic pain (Mills et al., 2019). Co-morbid depression is present in 20-50% of chronic pain patients. Severe pain triggers depression more often than less severe chronic pain. It is common for depression to go unrecognized in chronic pain patients. People who do get diagnosed, even if they get treatment and improve, are at an even higher risk for chronic pain (Mills et al., 2019). Depression is both a cause and effect of chronic pain. Patients with chronic pain should be screened for depression and patients with depression should be screened for chronic pain. Patients who see their

provider for depression are at a higher likelihood of consulting their provider for chronic pain (Dai et al., 2021; Mills et al., 2019; Yong et al., 2021).

Stress

Stress is associated with developing chronic pain and a less favorable prognosis for improvement in chronic pain. Chronic pain patients often experience anger and frustration about not being able to complete simple tasks, activities of daily living, and not being able to join in family or social activities. The mental exhaustion from having to plan out minute details just to be able to do these things magnifies the pain and potentiates stress. Individuals who seek medical attention for stress or tension are also very likely to consult their provider about chronic pain (Yong et al, 2021).

Chronic pain is common in those who have PTSD (post-traumatic stress disorder). The depth of the connection varies with the type of chronic pain and the cause of the PTSD. Stress and chronic pain exist in a bidirectional relationship necessitating that those individuals under stress be screened for chronic pain and vice versa (Dai et al., 2018; Hadi et al, 2018; Yong et al., 2021).

Quality of Life

Quality of life involves a person's view of their place in life based on their culture and value system as it relates to their expectations, life objectives, concerns, and personal standards (WHO, 1997). The negative impact of chronic pain is multidimensional and points to poorer quality of life among chronic pain patients. Chronic pain interferes with all aspects of a person's life. Many chronic pain patients see chronic pain as the source of all the problems they face (Mullins et al., 2022). It drains the person of physical and mental energy and financial resources, keeping them from participating in activities they enjoy, even activities of daily living. The adjustments that must be made to navigate life are overwhelming to most people. Individuals express feeling like being a burden on their family and friends. Pressures of developing and maintaining healthy relationships is immense (Hadi et al., 2018). Interruptions in work and social life, sleep deprivation, and mood disorders account for other factors that have a big impact on quality of life (Hadi et al., 2018; Mills et al., 2019; Mullins et al., 2022).

Chapter 3

Methodology

This project was a pilot study with a prospective cohort design. Participants were asked to complete a demographic survey and pre and post-intervention assessments of chronic pain, depression, stress, and quality of life (see Instruments section below and Appendix A). Six group one-hour songwriting sessions were offered via Zoom (see Content in Appendix B). Content was developed using a book on songwriting for beginners (Smith & Boe, 2017). Quantitative data was collected and analyzed using SPSS statistical software. Participants' opinions about the intervention were assessed at the end of the intervention.

Instruments

The following is a review of the instruments used in this study to obtain demographic data and measurements of chronic pain, depression, stress, and quality of life. The instruments were sent to participants electronically via Qualtrics (See Appendix A Instruments).

Demographic Survey

The Demographic Survey was developed by the principal investigator (PI) and contains questions about age, gender, race, ethnicity, employment status, education level, and range of income: Are you employed, unemployed, or retired? What is your race (White; Black or African American; American Indian or Alaska native; Asian; Native Hawaiian or other pacific Islander; some other race)? What is your annual household income range? What is your highest level of education (college, high school diplomas or equivalent, middle school)?

Graded Chronic Pain Scale-Revised (GCPS-R)

The Graded Chronic Pain Scale-Revised (GCSP-R) grades chronic pain as mild (Grade 1), bothersome (Grade 2), or high impact (Grade 3). It is comprised of six items and takes less than five minutes to complete. It is designed for adults 18 years of age and older. The instrument includes the widely used PEG scale (Pain, Enjoyment, & General Activity) which is made up of items three-five on the GCPS-R. The PEG scale is brief and useful for continuous, responsive measurement of current pain

(Von Korff et al., 2020). The PEG has demonstrated good construct validity with adequate Cronbach's alphas (.73-.89) in the initial developmental study samples (Krebs et al., 2009).

The GCPS-R is a revision of the GCPS originally created by Michael Von Korff, Johan Ormel, Francis J. Keefe, and Samuel F. Dworkin (Von Korff et al., 1992). This newer version was done in 2020 by Michael Von Korff, Lynn L. DeBar, Erin E. Krevs, Robert D. Kerns Richard A. Deyo, and Francis J. Keef. Revisions were necessitated by emerging evidence differentiating chronic pain from high-impact chronic pain and the fact that chronic pain severity can be accurately assessed in a generic manner. The original version had the client specify areas of pain. Persons with chronic pain often have pain at multiple sites, and a less complex version was indicated because of that and other reasons (Von Korff et al., 2020).

Concurrent validity was evaluated for the GCPS-R relative to indicators of negative coping beliefs, unfavorable health status, activity limitations, and long-term opioid therapy. The authors also looked at the instrument's ability to identify individuals who rated their pain as "severe" and those who were not working, laid off, or unable to remain employed because of chronic pain (Von Korff et al., 2020).

GCPS-R proved "highly sensitive" in that 95.9% (236) of the 246 respondents who stated their pain was "severe" fell into the GCPS-R classification of Grade 3 or high-impact chronic pain. Of the 129 persons who were unemployed or laid off, 112 (86.8%) matched the GCPS-R classification as having high-impact chronic pain.

Patient Health Questionnaire-9 (PHQ-9)

The Patient Health Questionnaire (PHQ) was developed by Robert Spitzer, Janet B. W. Williams, and Kurt Kroenke in 1999 (Spitzer et al., 1999). The PHQ-9 screens for depression and severity of symptoms for patients 18 years of age and older. It has nine items, corresponding to the DSM-IV (Diagnostic & Statistical Manual of Mental Disorders) nine criteria for depression (Levis et al., 2019). It is self-administered and takes about three minutes to complete (Kroenke et al., 2000).

Internal reliability is excellent with Cronbach's alphas of .89 - .91. (Kroenke et al., 2001; Ahmad et al., 2018). The PHQ-9 has very good sensitivity (.81-.95) and good specificity (.78 - .86) with 95%

confidence intervals. The PHQ-9 has good positive and negative predictive values (mean +=.66; mean -=.88). The instrument has good construct and criterion validity. The PHQ-9 can be used to detect change over time and monitor response to treatment for depression (Kroenke et al., 2000; Levis et al., 2019).

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) was developed in 1983 by Sheldon Cohen, Tom Kamarck, and Robin Mermelstein. It is one of the most popular instruments for assessing psychological stress in the world. The PSS measures respondents' perceptions of the stress involved with situations in their lives over the last month. The tool consists of ten items and takes about five minutes to complete. The PSS was designed for use for individuals with at least a junior high school education in community settings. It has been translated into over 25 languages (Cohen, S. et al., 1983; Lee, 2012).

The PSS shows good internal consistency with Cronbach's alphas greater than .70 (.74-.91) in Lee's (2012) review of the tool's psychometric properties involving 12 research studies. Test-retest reliability was checked in 4 of the 12 studies reviewed and all were greater than .70. Baik et al. (2017) reported Cronbach's alpha .78 for good internal consistency, moderate concurrent criterion validity, and adequate convergent validity.

World Health Organization Quality of Life-BREF (WHOQOL-BREF)

The World Health Organization Quality of Life-BREF (WHOQOL-BREF) was developed over several years and from 15 global health centers. It contains 26 questions in four domains: physical and psychological health, social relationships, and environment. The tool takes about 15 minutes to complete. Respondents answer questions on a five-point Likert scale. Two of the items ask the person pointedly about their overarching perception of their health and quality of life. The instrument was designed for adults 18 and older and is available in 19 languages The instrument has good discriminant, content, and convergent validity (Amir et al., 2002). Cheung et al., (2017) found good internal reliability of the English version as follows: Cronbach's alpha for physical health (.83); psychological health (.85); social relationships (.82) and environment (.86).

Settings and Resources

After GCSU IRB approval, the pilot study took place August-September 2022 in a chronic pain support group, PainConnection, affiliated with the U.S. Pain Foundation. The group met virtually on Zoom. A masters prepared registered nurse with 39 years of songwriting experience administered the songwriting interventions. Clinical Director for PainConnection, Gwenn Herman, LCSW, DCSW (licensed clinical social worker, diplomate in clinical social work) attended the sessions and was available for groups dynamics and mental health referral support.

Individuals needing mental health services were to be referred to SAMSHA (Substance Abuse and Mental Health Services Administration) of the U.S. Department of Health & Human Services. The national toll-free help line is 800-652-4357, and website www.https://samsha.gov. No referrals were needed. The author funded this translational clinical project.

Study Population

Forty-one study participants were recruited from PainConnection meeting the following criteria: individuals with chronic pain, 18 or older, English-speaking, and capable of making their own decisions. Opportunity to participate in the study was offered to members of PainConnection, and participants were screened by the clinical director of PainConnection. Thirteen participants completed the study. Three recruitment strategies were utilized. Prior to beginning the recruitment, the PI gave a virtual live presentation on “Building Your Toolbox”, a segment of the weekly support group meeting in May 2022. This meeting was to introduce the group leader and support group members to songwriting as a potential tool in managing chronic pain. A flyer and video describing the pilot study was distributed to potential participants by the clinical director after IRB approval was obtained in June 2022. Data from the instruments was collected before the songwriting intervention and after it was completed.

Data Analysis

Data obtained from the results of pre and post-intervention scores was analyzed to answer the following clinical questions by utilization of the statistic indicated.

1. How did participants rate their chronic pain, depression, stress, and quality of life as measured by the Graded Chronic Pain Scale-Revised (GCPS-R), Patient Health Questionnaire-9 (PHQ-9), Perceived Stress Scale (PSS), and World Health Organization Quality of Life BREF (WHO-QOL BREF) pre-intervention and post- intervention? Descriptive statistics were used to determine the pre-intervention and post-intervention ratings the participants have on the instruments used in the survey.

2. What demographic factors were associated with statistically significant differences in chronic pain, depression, stress, and quality of life pre-intervention and post- intervention? A paired samples t-test was used to determine any statistically significant differences in the variables pre-intervention to post-intervention. The mean differences between pre- and post-intervention scores for each psychometric instrument was calculated. This let the PI know whether the independent variable of the songwriting intervention had a statistically significant effect on the dependent variables of chronic pain, depression, stress, and quality of life (Laerd Statistics, 2015).

3. Was there a statistically significant difference in the demographic variables, chronic pain, depression, stress, and quality of life pre-intervention to post-intervention? Parametric and non-parametric statistics were used to determine if there were any differences in the variables pre-intervention to post-intervention. The PI evaluated differences in the demographic variables, chronic pain, depression, stress, and quality of life pre-intervention to post-intervention. These tests determine strength and direction of a linear relationship between two continuous variables (Laerd Statistics, 2015).

4. What is the relationship between the demographic variables, chronic pain, depression, stress, to quality of life in the pre-intervention scores and the post-intervention scores? Correlational statistics were used to determine the relationship of the variable to the outcome variable quality of life. The PI determined relationships between the variables, chronic pain, depression, and stress to quality of life pre-intervention scores and post-intervention score by using Pearson's correlation. This test determines strength and direction of a linear relationship between two continuous variables (Laerd Statistics, 2015).

5. How much of the variance in quality of life pre-and post-intervention was associated with the demographic variables, chronic pain, depression, stress? Multiple linear Regression was used to assess the

amount of variance in quality of life pre- and post- intervention. The PI used multiple regression to determine if chronic pain, depression, or stress were associated. This test is used to evaluate the "linear relationship between two continuous variables to predict the value of a dependent variable based on the value of an independent variable" (Laerd Statistics, 2015).

6. What comments and suggestions did participants have about the intervention and for improving it for future use? Answers were compiled and analyzed to determine if any part of the study was problematic or beneficial for the participants.

Quality

The study was done under the auspices of a faculty chair and project team from GCSU. Extensive efforts have been made to research the problem and the intervention. There was strong interest in the project from the clinical site director and CEO of the U.S. Pain Foundation and collaboration was continuous and strong. Data was password protected and will be destroyed three years from the completion of the study. Screening of participants was done by the clinical director of PainConnection. Contact with participants was channeled through the clinical director. No medical information was shared with the PI.

Ethics and Human Subjects Protection

Participants were informed that there a would be an opportunity for them to meet individually with a professional songwriter after the study was completed. The PI selected songwriters from her professional network of writers. There would be no financial obligation or compensation involved for either party. The purpose would be to give participants the chance to get their ideas or personal story of chronic pain experience put into a song.

The PI is a master prepared registered nurse familiar with pain management and crisis intervention. Institutional Review Board (IRB) approval was obtained in June 2022. This process was shared with the clinical director of the site. Questions from the clinical director of PainConnection and the U.S. Pain Foundation CEO were answered in writing and discussed. The proposed songwriting intervention posed no known risks to participants, and it was hoped that improvement in pain, depression,

stress, and quality of life would be achieved. It was not anticipated that participants would experience any mental distress by participating in this study.

The clinical director of PainConnection was present during the interventions to assist with group dynamics. Should participants have demonstrated any indication of distress on the pre- and post-instrumental scores or during participation in the study, appropriate mental health referrals would have been made to SAMSHA (Substance Abuse and Mental Health Services Administration) of the U.S. Department of Health & Human Services. The national toll-free line is 800-652-4357 and website, www.https://samsha.gov.

Timeframes or Timeline

The PI presented the project proposal to her committee June 28, and IRB approval was obtained later that month. The author was a guest speaker on "Building Your Toolbox" May 3, 2022, for PainConnection to talk about songwriting as an effective alternative treatment for chronic pain. The study took place August-September 2022.

The author's time was donated to administer the interventions. Participants were given a copy of Adventures in Songwriting (Smith & Boe, 2017). The approximate cost of the book is
$15 times 13 participants equals $195 for the incentive. CITI training for the clinical director was paid by the PI ($120).

Psychological Factors Associated with Chronic Pain

Chronic pain affects the person in multidimensional ways, not just in the physical sense. The psychological impact is immense and is beyond the scope of this study. The evidence shows that depression, stress, and decreased quality of life are commonly associated with chronic pain and will be discussed below.

Depression

Chronic pain is associated with depression and chronic pain patients with depression are more likely to have worse outcomes with chronic pain (Mills et al., 2019). Co-morbid depression is present in 20-50% of chronic pain patients. Severe pain triggers depression more often than less severe chronic pain.

It is common for depression to go unrecognized in chronic pain patients. People who do get diagnosed, even if they get treatment and improve, are at an even higher risk for chronic pain (Mills et al., 2019). Depression is both a cause and effect of chronic pain.

Patients with chronic pain should be screened for depression and patients with depression should be screened for chronic pain. Patients who see their provider for depression are at a higher likelihood of consulting their provider for chronic pain (Dai et al., 2021; Mills et al., 2019; Yong et al., 2021).

Stress

Stress is associated with developing chronic pain and a less favorable prognosis for improvement in chronic pain. Chronic pain patients often experience anger and frustration about not being able to complete simple tasks, activities of daily living, and not being able to join in family or social activities. The mental exhaustion from having to plan out minute details just to be able to do these things magnifies the pain and potentiates stress. Individuals who seek medical attention for stress or tension are also very likely to consult their provider about chronic pain (Yong et al, 2021).

Chronic pain is common in those who have PTSD (post-traumatic stress disorder). The depth of the connection varies with the type of chronic pain and the cause of the PTSD. Stress and chronic pain exist in a bidirectional relationship necessitating that those individuals under stress be screened for chronic pain and vice versa (Dai et al., 2018; Hadi et al, 2018; Yong et al., 2021).

Quality of Life

Quality of life involves a person's view of their place in life based on their culture and value system as it relates to their expectations, life objectives, concerns, and personal standards (WHO, 1997). The negative impact of chronic pain is multidimensional and points to poorer quality of life among chronic pain patients. Chronic pain interferes with all aspects of a person's life. Many chronic pain patients see chronic pain as the source of all the problems they face (Mullins et al., 2022). It drains the person of physical and mental energy and financial resources, keeping them from participating in activities they enjoy, even activities of daily living.

The adjustments that must be made to navigate life are overwhelming to most people. Individuals express feeling like being a burden on their family and friends. Pressures of developing and maintaining healthy relationships is immense (Hadi et al., 2018). Interruptions in work and social life, sleep deprivation, and mood disorders account for other factors that have a big impact on quality of life (Hadi et al., 2018; Mills et al., 2019; Mullins et al., 2022).

The aim of this pilot study was to investigate the effectiveness of a nurse-led songwriting intervention to improve quality of life for individuals with chronic pain. Depression, stress, and decreased quality of life are common among this population. The PI felt it was fitting to examine the relationships among chronic pain, depression, stress, and quality of life using the theoretical model Theory of Unpleasant Symptoms which delineates the fluid, interconnected relationships among physical, psychological, and environmental factors.

Chapter 4

Results

The results of this prospective correlational clinical project on the effectiveness of a nurse-led songwriting intervention on quality of life for individuals with chronic pain are reported here. Findings include descriptive information concerning the participants, the reliability of the instruments, and data addressing the clinical questions. Data screening was performed prior to conduction of the statistical analyses. Data were initially collected within the Qualtrics Survey system maintained through Georgia College's servers. The data files were then exported to SPSS version 28 within Qualtrics and downloaded for analysis to a secured file. Any discrepancies noted w demographic variables were examined for missing data and there were none missing.

The study's instruments were examined for missing or irregular data. One participant was eliminated from the study due to omitting the bulk of the survey questions. Two participants did not complete the last section of the survey on quality of life. It is unknown to the principal investigator (PI) why these questions were left unanswered.

The study's instruments were examined for missing or irregular data. Forty-one participants started the study and completed the pre-intervention survey. The survey was a composite of four instruments: Graded Chronic Pain Scale-Revised (GCPS-R), Patient Health Questionnaire 9 (PHQ-9), Perceived Stress Scale (PSS), and World Health Organization Quality of Life BREF (WHOQOL-BREF). One participant completed the first three instruments' assessments but did not submit answers for the WHOQOL-BREF. This subject's data was included because the bulk of the survey was done. One participant only completed the Graded Chronic Pain Scale-R, so the data was not included in the study results.

The post-intervention survey was completed by seventeen participants. Four of these participants completed the post-intervention survey but did not complete the pre intervention

survey. Their data was excluded from the study leaving thirteen participants who completed all the study's instruments. Data analysis indicated there was no missing data, so no imputations were needed. Table 1 reviews the study instruments.

Table 1

Study Instrument's Variable, Name and Generated Measurement

Variable	Instrument	Generated Measurement
GCPS-revised	Graded Chronic Pain Scale-Revised	The Graded Chronic Pain Scale-Revised (GCSP-R) grades chronic pain as mild (Grade 1), bothersome (Grade 2), or high impact (Grade 3). The instrument includes the widely used PEG scale (Pain, Enjoyment, & General Activity) which is made up of items three-five on the GCPS-R. The PEG scale is brief and useful for continuous, responsive measurement of current pain. A PEG score of < 12 = Grade 1. A score > 12 = Grade 2.
PHQ-9	Patient Health Questionnaire 9	The PHQ-9 screens for depression and severity of symptoms for patient 18 years of age and older. It has nine items, corresponding to the DSM-IV (Diagnostic & Statistical Manual of Mental Disorders) nine criteria for depression. The total score for the nine items is added up. A score of 1-4 = minimal depression; 5-9 mild depression; 10-14 moderate depression; 15-19 moderately severe depression; 20-27 severe depressions
PSS	Perceived Stress Scale	The PSS measures respondents' perceptions of the stress involved with situations in their lives over the last month. The tool consists of ten items. PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10. Items 4, 5, 7, and 8 are the positively stated items. A score of 0-13 = low stress; 14-26 moderate stress; 27-40 high perceived stress.
WHOLQOL-BREF	World Health Organization Quality of Life-BREF	26 questions. Respondents answer questions on a five-point Likert scale. Two of the items ask the person about their overarching perception of their health and quality of life. The sum of the Likert responses = Overall QOL. The remaining items fall into 4 subscales: Physical Health, Psychological Health, Social Relationships, and Environment. Scores = the sum of the Likert responses. Higher scores indicate better QOL.

Data Analysis

After reviewing all interval and ratio level data from the four study instruments for central tendencies, it was found that all data were normally distributed. This was true for pre-intervention and post-intervention data.

Of the 13 participants who completed the study, 12 were female (92.3%), Non-Hispanic or Latino (77%, n = 10), white (85 %, n = 11), retired (54%, n = 7), and had a master's degree or higher (46%, n = 6). Comparison of those participants that started the study but did not complete it to those that did complete the study are shown in Table 2.

Table 2

Characteristics of Participants by Starters and Completers

	Starters				***Completers***			
	n	**%**	**M**	**SD**	**n**	**%**	**M**	**S**
Gender								
Male	4	9.7			**1**	7.6		
Female	36	87.8			12	92.3		
Other	1	2.4						
Race								
Black	3	7.3			1	7.6		
White	33	80.4			11	85		
Asian/Native.AM	1	2.4						
Another race	1	2.4						
Multiple race	3	7.3			1	7.6		
Ethnicity								
Hispanic	5	12.2			3	23		
Non-Hispanic	36	87.8			10	77		
Education								
Diploma/Equiv	1	2.4						
Some college	4	9.7			2	15		
Associate/diploma	8	19.5			1	7.7		
Bachelor's	9	2.2			4	31		
Master's or higher	19	46.3			6	46		

Table 2 Continued

Characteristics of Participants by Starters and Completers

	Starters				***Completers***			
	n	**%**	**M**	**SD**	**n**	**%**	**M**	**S**
Employment								
Employed	12	29.2			3	23		
Unemployed	16	39			3	23		
Retired	13	31.7			7	54		
Age	41	54.10	11.75		13	60.15	12.16	
PEG	28	19.96	5.28		13	20.54	5.32	
PHQ-9	28	12.46	5.98		13	8.85	5.81	
PSS	28	22.54	6.71		13	20.15	7.47	
WHO-QOLBREF								
*Physical	26	14.12	3.28		13	15.15	3.87	
*Psychological	26	17.65	4.31		13	18.31	4.87	
*Social	26	5.00	1.47		13	4.62	2.06	
*Environment	26	27.77	5.72		13	27.85	7.83	

**Domains of the WHO-QOL*

Description of the Instruments

This section describes the study instruments, reliability in this sample, the mean scores, and standard deviations. Instruments used as continuous variables were normally distributed after transformation. Tables 3 and 4 review the reliability of the study's instruments and scoring for pre-intervention and post-intervention respectively.

Table 3

Descriptions of Research Instruments Pre-Intervention

Variable	*M (SD)*	Observed Range	Possible Range	Interpretation	α
PEG	20.55(1.48)	0-29	0-30	Higher scores, higher pain level	.85
PHQ-9	8.85(5.81)	2-27	0-27	Higher scores, more depression	.83

Table 3 Continued

PSS	20.15(7.47)	11-32	0-40	Higher scores, more stress	.89
WHO-QOL BREF overall	5.15(1.95)	3-8	2-10	Higher scores, better health	.88
*Physical	15.15(1.073)	16-23	7-35	Higher scores, better PH	.70
*Psychological	18.31(4.87)	13-26	6-30	Higher scores, better PSH	.77
*Social	4.62(4.26)	3-7	3-15	Higher scores, better Social	.71
*Environment	27.85(7.83)	18-37	8-40	Higher scores, better ENV	.86

***** *Domains of WHOL-QOL-BREF*

Graded Chronic Pain Scale-Revised. Chronic pain was measured using the Graded Chronic Pain Scale-Revised (GCPS-R) which is a six item instrument that grades chronic pain as mild (Grade 1), bothersome (Grade 2), or high impact (Grade 3). Included in this instrument is a subscale, Pain, Enjoyment, and General Activity (PEG), which is a sum of items three-five. A PEG score < 12 = Grade 1; PEG score > 1 = Grade 2. Grade 3 High Impact chronic pain is denoted by a composite score of the first two questions related to number of pain days. A PEG score was calculated for all participants and each participant was assigned a pain grade according to GCPS-R. Cronbach's alphas for the PEG scores in the pre-intervention and post-intervention samples were acceptable at .85 and .88 respectively.

Patient Health Questionaire-9. Depression was measured using the Patient Health Questionaire-9 (PHQ-9) which is a nine item instrument that screens for depression and severity of symptoms. The total score is a sum of the nine items. A score of 1-4 = minimal depression; 5-9 mild depression; 10-14 moderate depression; 15-19 moderately severe depression; 27-40 severe depression. Cronbach's alphas for the PHQ-9 for the pre-intervention and post-intervention samples were acceptable at .83 and .81 respectively.

Perceived Stress Scale. Stress was measured using the Perceived Stress Scale (PSS) which is a 10 item instrument which measures perceived stress related to life situations over the last month. PSS-10

scores are obtained by reversing the scores on the four positive items, e.g., 0 = 4, 1 = 3, 2 = 2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items. A score of 0-13 = low stress; 14 - 26 moderate stress; 27- 40 high perceived stress. Cronbach's alphas for the pre-intervention and post-intervention samples were acceptable at .89 and .89 respectively.

World Health Organization Quality of Life BREF. Quality of life was measured using the World Health Organization Quality of Life BREF (WHO-QOL-BREF). The WHOQOL-BREF contains 26 questions in four domains: physical and psychological health, social relationships, and environment. Respondents answer questions on a five-point Likert scale. Two of the items ask the person about their perception of their health and quality of life. There are 4 subscales: Physical Health score is denoted by the sum of these items (3, 4, 10, 15, 17, 18). Psychological Health score is denoted by the sum of these items (5, 6, 11, 19, 26). Social Relationships score is denoted by the sum of these items (20, 21, 22). Environment score is denoted by the sum of these items (8, 9, 12, 13, 14. 23, 24, 25). Higher scores indicate a higher quality of life.

Analysis of the Research Questions

Prior to beginning the analysis, the independent variables (age, gender, income, PEG scores, PHQ-9 scores, PSS scores, QOL overall scores, Physical health scores, Psychological health scores, Social relationships scores, and Environment scores) for pre-intervention and post-intervention samples were examined for multicollinearity. There were several significant correlations between the independent variables (PSS, PHQ-9, PEG, QOL overall, Physical Health, Psychological Health, Social, Environment). For correlations greater than or equal to .70, variance inflation factors (VIF) were calculated. These will be addressed in the clinical questions portion of the study. Tables 5 and 6 report the Pearson's correlations between all the main variables in the study pre-intervention and post-intervention.

Table 5

Pearson's Correlations between the Major Variables Pre-intervention for the Thirteen Participants

		1	2	3	4	5	6.	7	8	9	10
1. Age	*r*										
2. Gender 1	*r*	-.004									
3. Income	*r*	-.009	-.019								
4. PEG	*r*	-.126	.013	.194							
5. PHQ9	*r*	-.088	.059	.268	-.375*						
6. PSS	*r*	.-053	.222	.156	.183	.657**					
7. QOL	*r*	-.066	-.016	.012	-.381*	-.621**	-.631**				
8. PHYS	*r*	.008	-.013	.124	-.403*	-.457**	-.404**	-.631**			
9. PSYCH	*r*	.079	-.123	.037	-.178	-.712**	-.749**	.702**	.432**		
10. Social	*r*	.-086	-.106	-.388*	-.312	-.418**	-.525**	.351**	.296	.319*	
11. Environment	*r*	-.247	-.286	.188	-.315	-.447**	-.604**	.614**	.416**	.458**	.457

* *P* < .05, ** *P* < .001

Table 6

Pearson's Correlations between the Major Variables Post-intervention for the Thirteen Participants

		1	2	3	4	5	6.	7	8	9	10
1. Age	*r*										
2. Gender 1	*r*	-.004									
3. Income	*r*	.009	-.019								
4. PEG	*r*	-.347	.361	.102							
5. PHQ9	*r*	-.007	.243	.662*	.382						
6. PSS	*r*	-.261	.322	.598*	.559*	.834**					
7. QOL	*r*	.025	.000	-.051	-.648**	-.607*	-.561*				
8. PHYS	*r*	.057	-.328	-.152	-.793**	-.653**	-.681*	.853**			
9. PSYCH	*r*	.256	.183	-.513	-.483	-.776**	-.791**	.757**	.664**		
10. Social	*r*	.345	-.009	.450	-.806**	--.539*	-.731**	.643**	.719**	.657	
11. Environment	*r*	-.164	.286	.308	-.331	-.285	-352	.622*	.689**	.270	.360

* *P* < .05, ** *P* < .001

Clinical Questions

Data obtained from the results of pre and post intervention scores were analyzed to answer the following clinical questions by utilization of the statistic indicated.

Clinical Question 1

How do participants rate their chronic pain, depression, stress, and quality of life as measured by the Graded Chronic Pain Scale-Revised (GCPS-R), Patient Health Questionnaire-9 (PHQ-9), Perceived Stress Scale (PSS), and World Health Organization Quality of Life BREF(WHO-QOL BREF) pre-intervention and post- intervention? Descriptive statistics were used to determine the pre- intervention and post-intervention ratings the participants had on the instruments used in the survey. Table 7 shows the participants' ratings pre-intervention and post intervention.

Table 7

Participant Rating of Study Variables

	Pre-Intervention		Post-Intervention		*t*
Variable	*M*	*SD*	*M*	*SD*	
PEG	20.54	5.32	17.16	6.78	3.29*
Pain Grade	Grade 2 – 15.4% Grade 3 – 84.6%		Grade 1 – 15.4% Grade 2 – 7.7% Grade 3 – 76.9%		
PHQ-9 Score	8.85	5.81	8.85	5.98	0
Depression Severity	None – 23.1% Mild – 38.5%		None – 30.8% Mild – 30.8%		

Table 7 Continued

Participant Rating of Study Variables

	Pre-Intervention		Post-Intervention		*t*
Variable	*M*	*SD*	*M*	*SD*	
	Moderate – 30.8%		Moderate – 23.1%		
	Severe – 7.7%		Moderately Severe – 7.7%		
Perceived Stress Scale	20.15	7.47	19.46	7.9	.53
Level of Stress	Low – 23.1%		Low – 23.1%		
	Moderate – 53.8%		Moderate – 53.8%		
	High – 23.1%		High – 23.1%		
WHOQOL-BREF					
Overall	5.15	1.95	5.00	.16	.81
Physical	15.15	3.87	14.69	3.95	.65
Psychological	18.31	4.87	19.23	5.31	.90
Social	4.62	2.06	7.92	2.47	9.54**
Environment	27.85	7.83	27.69	7.69	.25

*$p < .01$, **$p < .001$

In this study, the nurse-led songwriting intervention decreased chronic pain and increased a sense of social support.

Clinical Question 2

Was there a statistically significant difference in the demographic variables, chronic pain, depression, stress, and quality of life pre-intervention to post-intervention? Paired samples t tests and t tests were used to compare the means of the demographic variables.

Due to the low number of participants that completed this pilot study (N = 13), no comparisons could be made for the demographic variables (see Table 2 for demographic variables) as the demographic variables were essentially identical pre-intervention to post-intervention. Table 6 reviews the pre-intervention to post-invention statistical results. In this study, the thirteen participants experienced an increased sense of satisfaction with social relationships and decreased levels of chronic pain.

Clinical Question 3

What demographic factors were associated with statistically significant differences in chronic pain, depression, stress, and quality of life pre-intervention and post-intervention? Paired t tests and t tests were used to compare the means of the outcome variables.

Due to the low number of participants that completed this pilot study (N = 13), no comparisons could be made for the demographic variables (See Table 2 for demographic variables) and relationships to the study's outcome variables.

Clinical Question 4

What is the relationship between the demographic variables, chronic pain, depression, stress, to quality of life in the pre-intervention scores and the post-intervention scores? There was no significant difference between the starters and completers in scores on the PEG, PHQ-9, PSS, and the four domains of the WHO-QOL BREF. See Table 5 for correlations between the major variables pre-intervention and post-intervention for the thirteen participants.

In the pre-intervention sample there was a strong negative correlation between psychological health and levels of depression and stress. For the participants in this study, if their levels of depression and stress were high, their psychological health was low.

In the post intervention sample, there was a strong positive correlation between levels of stress and depression. For the participants in this study, if their levels of stress increased, so did their severity of depression. As the thirteen participants' chronic pain increased, their physical health decreased. A strong

positive correlation existed between study participants' physical health and overall quality of life. As their physical health improved, quality of life increased. A strong positive correlation was found between the 13 participants' psychological health and overall quality of life. As their psychological health improved, so did overall quality of life. For the participants in this study, a strong negative correlation was found between social support and chronic pain, depression, and stress. As participants' social support declined, levels of depression, stress, and chronic pain increased. As the participants' social support increased, so did their physical health in this pilot study.

Clinical Question 5

How much of the variance in quality of life pre-intervention and post-intervention was associated with the demographic variables, chronic pain, depression, and stress? A hierarchal linear regression was conducted to test if age, chronic pain, depression, and stress accounted for a significant amount of the variance in the overall quality of life pre-intervention. Regression results indicated that the model accounted for 46% of the variance in overall quality of life, however, it was not significant ($R^2 = .46$, R^2 adj. = .19, $F(4, 8) = 1.7$, $p = .24$). The results are not congruent possibly because of the limited number of participants in the study.

A hierarchical linear regression was conducted to test if age, chronic pain, depression, and stress accounted for a significant amount of the variance in the overall quality of life post-intervention. Regression results indicated that the model accounted for 58% of the variance in overall quality of life, however, it was not significant ($R^2 = .58$, R^2 adj. = .37, $F(4, 8) = 2.76$, $p = .10$).). The results are not congruent possibly because of the limited number of participants in the study.

Clinical Question 6

What comments and suggestions did participants have about the nurse-led songwriting intervention and for improving it for future use? Participants expressed liking the PI's positivity and encouragement and looked forward to meeting each week. They liked having homework and felt they learned by

completing it. Some participants shared they were paying more attention to songs they heard and were going to continue to write songs. Opportunities for improvement included providing a syllabus, increasing the number of sessions, and working on their own songs during the sessions.

Conclusion

The nurse-led songwriting intervention was shown to decrease chronic pain and increase a sense of social support among the 13 study participants. In the pre-intervention group, psychological health decreased as stress and depression increased. The post-intervention sample demonstrated that stress increased as depression increased and psychological health declined. As physical and psychological health improved, so did quality of life. As chronic pain increased, physical health declined. Participants' sense of social support decreased as chronic pain, depression, and stress increased. As social support increased, so did physical health.

Chapter 5

Discussion

This section presents the findings of the pilot study. Results will be discussed in the following sections: relation to the theoretical model, participant population, psychometric instruments' performance in the selected population in this study, findings, quality of life and social health, correlations between the variables, participant comments, strengths of the study, limitations of the study, implications for practice, future research, and the study conclusion.

Theoretical Model

The Theory of Unpleasant Symptoms (TOUS) was the guiding theoretical model for this study. The PI chose TOUS because it provides a framework for understanding how symptoms affect the whole person, body, mind, and emotions (Mental Health, 2022; Srivastava et al., 2021; Zelaya et al., 2021). In this study participants experienced disruption in activities of daily living because of chronic pain, depression, and stress. Quality of life was impacted by unpleasant physical and psychological symptoms. Participants' social and physical environments were directly related to chronic pain, depression, and stress symptoms. The findings had a strong correlation with the theory and this was the expectation of the PI.

Kang & Kim (2022) used TOUS and also found that perceived health status, psychological distress, and social support had significant direct relationships with health related quality of life. Similarly to this clinical project, Sakdisthanont et al. (2020) studied relationships between pain, stress, fatigue, and quality of life in adolescents with systemic lupus erythematosus (SLE) using TOUS. Their results also indicated that pain, stress, and fatigue were all negatively correlated with quality of life. The Theory of Unpleasant Symptoms guided variable selection in a study on fatigue, pain, sleep difficulties, and depressive symptoms in Mexican Americans and Chinese Americans with Type 2 Diabetes. Depressive symptoms significantly predicted fatigue (Kuo et al., 2022).

Participant Population

Participants were recruited from a national online chronic pain support group, PainConnection, a program of the US Pain Foundation. All members of the support group were given the opportunity to participate. Forty-one individuals responded and began the intake process of completing pre-intervention surveys. The pre-intervention surveys addressed demographics, chronic pain, depression, stress, and quality of life. Of the 41 individuals who started the study, 13 completed it for an attrition rate of 31.7%. Bradt et al. (2018) experienced an attrition rate of 27% in their study of vocal music therapy for chronic pain patients. The physical and psychological stress of chronic pain often precipitates withdrawal from all but the necessary activities of daily living (Mental Health, 2022; Zelaya et al., 2021).

As the number of participants in the study was low (N = 13), comparisons between pre-intervention and post-intervention could not be made for the demographic variables of age, race, ethnicity, education, or employment. The variables were essentially identical pre-intervention and post-intervention. The predominant demographic was 60 year-old white female, non-Hispanic, master's degree and retired. This study's sample fit the typical demographic profile for individuals with chronic pain except for socioeconomic status (SES) and educational level. Participants in this study had higher levels of education (majority Master's level) and income (mean annual income $78,746, with a range of $12,000-$250,000).

Chronic pain is associated more often with lower SES (lower income, unemployment, lower level of education) than with higher SES (Dahlhamer et al., 2018; Mills et al., 2019; Mullins et al., 2022). The participants in this study had higher SES and specifically levels of education than the typical individual with chronic pain. This deviation could possibly be explained by the fact that these study participants belonged to an online chronic pain support group. Individuals with a lower SES do not generally have easy access to digital technology as compared to higher SES individuals (Paccoud et al., 2020 & Yoon et al., 2020).

Psychometric Instruments Performance

The following instruments were used in the pilot study: Graded Chronic Pain Scale-Revised GCPS-R and Pain, Enjoyment and General Activity PEG subscale (chronic pain); Patient Health Questionaire-9 PHQ-9 (depression); Perceived Stress Scale PSS (stress); and World Health Organization Quality of Life BREF WHOL-BREF (quality of life). These instruments performed very well for the population in this study except for the WHOQOL-BREF. There are four domains of this tool: physical health, psychological health, social, and environment. Physical health, psychological health, and social were acceptable and environment domain performed very well for the thirteen participants.

Findings

Participants rated their chronic pain (GCPS-R), depression (PHQ-9), stress (PSS), and quality of life (WHOQO.L-BREF) pre and post-intervention. The GCPS-R has a subscale, PEG, and grades chronic pain as mild (Grade 1), bothersome (Grade 2), or high impact (Grade 3). The mean PEG score pre-intervention was 20.54 (SD 5.32) and post-intervention was 17.16 (SD 6.78), t (12) = 3.29 $p < .01$. There was a statistically significant reduction in chronic pain from pre-intervention to post-intervention in PEG scores. This finding was congruent with previous studies which demonstrated that music interventions can help decrease chronic pain (Bradt, 2016, Ciergici et al., 2019, Howlin & Rooney, 2020, Martin-Saavedra et al., 2018).

Using the GCPS-R, participants' PEG scores and other related factors were used to grade the participants' pain. There was not a statistically significant difference in pain grade using the GCSP-R. Pre-intervention none of the participants had Grade 1 chronic pain; 15.4% had Grade 2 and 84.6 % had Grade 3. Post-intervention 15.4% had Grade 1 chronic pain; 7.7% had Grade 2 and 76.9% had Grade 3. There was an overall decrease in pain grade post-intervention for the study group: Grade 1 increased by 15.4 %, meaning participants' pain grade decreased from either Grade 2 or 3. Grade 2 chronic pain decreased by 50% and Grade 3 by 7.7%. In previous studies chronic pain severity has been shown to

decrease because of music interventions (Bradt, 2016, Ciergici et al., 2019, Howlin & Rooney, 2020, Martin-Saavedra et al., 2018).

The mean depression scores (PHQ-9) were unchanged from pre-intervention to post-intervention (8.85). Data revealed participants demonstrating no depression went from 23.1% to 30.8%. Mild depression went from 38.5% to 30.8%. Moderate depression decreased from 30.8% to 23.1%. No participants' data showed moderately severe depression pre-intervention and post-intervention was at 7.7%. Pre-intervention depression severity was 7.7% and none of the participants had severe depression at the conclusion of the study. These results mirror previous studies in which music interventions helped decrease severity of depression (Bradt et al., 2016; Ciergici et al., 2019; Dai et al., 2020).

Participants' mean stress scores (PSS) decreased slightly from pre-intervention, 20.15 (SD 7.47) to post-intervention, 19.46 (SD 7.9). Of the 13 study participants, 23.1% exhibited a low level of stress, 53.8 moderate stress and 23.1 high level of stress. Levels of stress (low, moderate, and high) were unchanged from pre-intervention to post-intervention. Other researchers have found that music interventions can help decrease anxiety and stress along with lowering blood pressure and heart rate (Howlin & Rooney, 2020, Jin, 2016, Martin-Saavedra et al., 2018).

Quality of Life and Social Health

Quality of life was assessed using the WHOQOL-BREF tool which has an overall health score along with physical, psychological, social, and environmental health scores. The mean overall health score declined from 5.15 to 5.00. The mean physical health score decreased from 15.15 to 14.69. The mean psychological health score increased from 18.31 to 19.23. The mean environmental health score decreased from 27.85 to 27.69. There was, however, a statistically significant increase in the participants' social health scores from pre-intervention 4.62 (SD 2.06) to post-intervention 7.9 (SD 2.47), t (12) = 9.54, $p < .001$. As their social support increased, so did physical and psychological health in this pilot study**.** As participants' social support declined, levels of depression, stress, and chronic pain increased.

Individuals with chronic pain are often isolated and opportunities to meet with others lifts their spirits and helps them cope with chronic pain (Bradt, 2016, Low et al., 2020).

Bradt (2016) found that vocal music therapy was effective in chronic pain management, specifically in improving self-efficacy, social engagement, and empowerment. Participants were gathered in focus groups at the conclusion of the study. Togetherness was a prominent theme as participants said they liked being with others who experienced chronic pain in this study. As they created music together, they felt a sense of unity and belonging. Low et al. (2020) studied vocal music therapy's effect on chronic pain and results revealed that participants expressed better self-management of chronic pain, and stronger social and spiritual interactions.

Bannon et al. (2021) found that individuals with chronic pain are vulnerable to social isolation and this makes their symptoms worse. This study suggests that mind-body interventions for chronic pain produced an improvements in social isolation. A 2019 study (Philpot et al. 2019) investigated the association of multiple dimensions of social relationship quality with clinically significant chronic pain. Individuals with chronic pain had lower friendship quality and higher feelings of rejection. Analysis revealed that chronic pain patients had poor physical health and were more likely to experience loneliness, rejection, and low friendship quality.

Researchers Duenas et al. (2016) did a review on the impact of chronic pain on chronic pain patients' social environment and the health care system. They found that the effects of chronic pain were detrimental to the person's family and social environment. Chronic pain restricts leisure activities and social engagement. Chronic pain symptoms often stir up negative emotions and make the person irritable and angry. This causes a negative impact on stress levels and interpersonal relationships.

The participants in this study expressed enjoyment of being in a meeting with others who were going through the same challenges they were facing. They were weary of the physical and psychological burdens of chronic pain and were eager to try songwriting as a complementary therapy. Participants stated

they looked forward to the sessions each week and did not want the intervention to end. They said it gave them comfort knowing the PI (who experiences chronic pain) could identify with them. They were engaged as much as they could be individually depending on how they were feeling week to week. The mood "in the room" increased from one session to another as the participants learned and supported each other learning about songwriting.

New content was presented in each session and older content was reviewed. Each week the participants had homework from the week before and they were called upon to share what they had learned. The sessions were interactive and everyone was expected to contribute to the discussion as much as they could. Songwriting helps a person process life experiences that are often very poignant and private. Sharing one's heart in conversation and eventually lyrics and melodies exposes vulnerabilities and strengths alike. It was remarkable to see the support each of the participants received from the group. The researcher could easily tell that each participant was receiving emotional support from the group. Group members readily interacted with each other and made supportive statements to each other throughout the process. There were no incidences of verbal or nonverbal unsupportive behaviors.

Correlations Between the Variables.

There were some expected findings about the effects of chronic pain on quality of life for the participants in this study. For example, higher stress levels were correlated with higher levels of depression, poorer physical health was correlated with higher levels of chronic pain, and higher quality of life ratings were correlated with better physical and psychological health. Numerous studies confirm that chronic pain is connected to mood disorders, decreased physical health, and poor quality of life (Dai et al., 2021, Hadi et al., 2018, Mills et al., 2019, Mullins et al., 2022, Yong et al., 2022).

The PI was interested in determining how much of the variance in quality of life from pre-intervention to post-intervention was associated with the demographic variables, chronic pain, depression, and stress. A regression analysis was done and results accounted for 46 % of the variance pre-intervention

and 58% post-intervention in overall quality of life, however, neither were significant. The strong correlations between all the variables (see Table 5) and the small number of participants, probably accounted for the high percentage of the variance but without statistical significance.

Participant Comments

Participants talked about how they looked forward to the songwriting sessions each week. They were very positive about having assignments to complete and expressed how it helped them learn the concepts discussed in the sessions. Participants expressed being awakened to listening to songs in a different way and that they understood why songwriters made certain choices of melody, rhyme, and structure. Participants unanimously wanted to increase the number of sessions and expressed sadness when the study concluded. Some of them wanted to have the opportunity to work on their own compositions during the writing sessions. Study participants in the Bradt et al. (2016) study on vocal music therapy expressed that the sessions helped decrease stress and pain while giving them a new outlook on pain management. They highlighted social engagement as an important benefit. Low et al. (2020) on vocal music therapy reported that study participants stated benefits of enhanced psychological wellbeing, better self-management of chronic pain and stronger spiritual and spiritual connections.

Strengths

The PI is an accomplished pianist, vocalist, and award-winning songwriter with four decades of songwriting experience and a master's prepared nurse with 38 years of practice experience. She is a nurse educator and skilled communicator. She has used music, particularly songwriting to cope with chronic pain for nearly two decades. The participants expressed enjoyment of her music and communication style.

The study took place in a virtual environment which was convenient for the participants. They could be comfortable in their own home environment. The clinical director for the support group, a licensed clinical social worker, was a study collaborator and was present for the sessions. She knew the

participants and helped monitor for cues of mental distress. She was also actively involved as a learner, though not an actual subject in the study.

Limitations

The chief limitation of the study was the small number of participants. The number of instruments utilized created a long survey which may have been a burden on the study participants. The WHOQOL-BREF instrument alone had 26 items. Portions of this tool did not perform well in this study population. The PI recommends choosing another quality of life instrument in future research.

The study took place over only six weeks. Participants expressed desiring a longer series of sessions. They also mentioned wanting a syllabus prior to the intervention. Perhaps providing written materials would be beneficial in decreasing pressure to take notes during the sessions.

The PI provided a copy of the book *Adventures in Songwriting* to the participants at the end of the study as a means of gratitude for their participation. She also offered opportunities for the participants to have a songwriting session with a professional songwriter (friends well known to the PI who were eager to participate) after the intervention was completed. It was hoped that this would give them a chance to learn more about writing and have their story or idea put into a song.

None of the participants responded to the opportunity. Perhaps they were intimidated or did not want to open up to a stranger. Songwriting is a vulnerable process among co-writers. The PI believes that participants would have been more likely to agree to a session with her, but this was not feasible with this group at the time. In the future the PI could provide welcome videos from the prospective professional songwriters to help the participants be more comfortable ahead of the opportunity to co-write.

Implications for Practice

Songwriting is an effective intervention for improving quality of life in patients with chronic pain. This population could benefit from engaging in nurse-led songwriting interventions. Songwriting

should be considered as a possibility for nonpharmacological complementary therapy for chronic pain as part of a multimodal pain management plan.

Future Research

There is very little information in the literature about the effectiveness of songwriting as an adjuvant therapy for chronic pain, depression, stress, and improving quality of life. More research needs to be done to explore the possibilities of utilizing songwriting to improve quality of life for individuals with chronic pain. This study was done as a prospective cohort pilot study. It would be beneficial to investigate this intervention's effect on larger sample sizes and also in a one on one setting.

Conclusion

Chronic pain affects 20% of the population and results in decreased productivity and poses a nearly 600 billion financial burden in this country. Seventy percent of patients are not satisfied with their pain management. The best approach to treatment is multidisciplinary and multimodal. Opioids are commonly prescribed for chronic pain and their destructive effects are blatant and lethal. The opioid crisis is worsening and there is a great need for nonpharmacological methods to help chronic pain patients. Individuals with chronic pain commonly suffer from depression, stress, and poor quality of life. Songwriting is an effective complementary therapy to help improve quality of life. It can help decrease chronic pain, severity of depression, and increase a sense of social support for this population. Chronic pain individuals often isolate themselves and suffer in their relationships with family and friends. Group activities like songwriting sessions provide an opportunity to be with others where the person feels understood and is invited to create art that expresses their innermost thoughts and feelings. Additional research is needed to build the body of science for active music interventions like songwriting to improve the lives for individuals with chronic pain.

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Appendix A-Instruments

Demographic Survey

1. What is your age? _____
2. What gender do you currently identify with? _____
3. What is your race?
    - White
    - Black or African American;
    - American Indian or Alaska Native
    - Asian; Native Hawaiian or another Pacific Islander
    - Another race.
4. What is your ethnicity?
    - Hispanic or Latino
    - Non- Hispanic or Latino
5. Are you employed, unemployed, or retired?
6. In 2021, what do you estimate was your annual household income? ___ ____
7. Circle what is your highest level of education?
    - Some High school
    - High School Diploma
    - Some College
    - Associate or Diploma Degree
    - Bachelorette Degree
    - Master Degree or higher

Graded Chronic Pain Scale Revised

1. In the past 3 months, **how often** did you have pain?

Never Some days Most days Every day

2. Over the past 3 months, **how often did pain limit your life or work activities**?

Never Some days Most days Every day

Now think about pain you have had during the past 7 days…

3. What number best describes **your pain, on average**?

☐ 0 No pain ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Pain as bad as you can imagine

4. During the past 7 days, what number best describes how **pain has interfered with your enjoyment of life**?

☐ 0 Does not interfere ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Completely interferes

5. During the past 7 days, what number best describes how **pain has interfered with your general activity?**

☐ 0 Does not interfere ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Completely interferes

6. Are you **not working or unable to work** due to pain or a pain condition?

Yes No

If you never had pain in the past 3 months, skip questions

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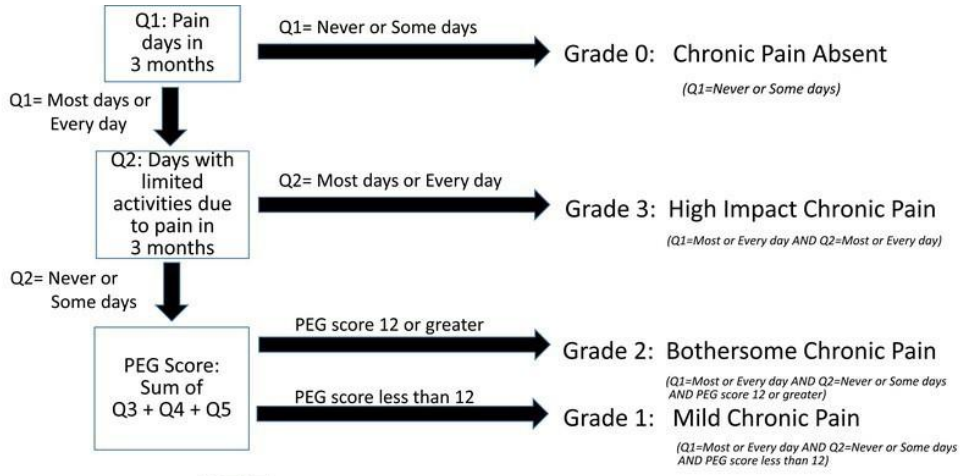
Graded Chronic Pain Scale Revised Scoring



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Notes: GCPS-R items 1 and 2 were developed by United States government employees (National Center for Health Statistics) and are therefore in the public domain. The PEG (GCPS-R items 3-5) is a work product of United States government employees (Veteran's Health Administration) and is therefore in the public domain

Perceived Stress Scale Scoring

PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items.

The PSS was designed for use with community samples with at least a junior high school education, the items are easy to understand and the response alternatives are simple to

grasp. Moreover, as noted above, the questions are quite general in nature and hence relatively free of content specific to any sub population group. The data reported in the article are from somewhat restricted samples, in that they are younger, more educated and contain fewer minority members than the general population. In light of the generality of scale content and simplicity of language and response alternatives, we feel that data from representative samples of the general population would not differ significantly from those reported below.

Perceived Stress Scale- 10 Item

Instructions: The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. **In the last month, how often have you been upset because of something that happened unexpectedly?**

___0=never __1=almost never __2=sometimes __3=fairly often __4=very often

2. **In the last month, how often have you felt that you were unable to control the important things in your life?**

___0=never __1=almost never __2=sometimes __3=fairly often __4=very often

3. **In the last month, how often have you felt nervous and "stressed"?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often
___

4. **In the last month, how often have you felt confident about your ability to handle your personal problems?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often
___

5. **In the last month, how often have you felt that things were going your way?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often
___

6. **In the last month, how often have you found that you could not cope with all the things that you had to do?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often
___

7. **In the last month, how often have you been able to control irritations in your life?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often
___

8. **In the last month, how often have you felt that you were on top of things?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often

9. **In the last month, how often have you been angered because of things that were outside of your control?**

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often

10 In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

___0=never __1=almost never __2=sometimes __3=fairly often 4=very often

PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.
Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every ✓ Not at all = 0; Several days = 1;
More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✓" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

WHOQOL-BREF

June 1997

U.S. Version

University of Washington

Seattle, Washington

United States of America

Emblem...Soul Catcher: a Northwest Coast Indian symbol of physical and mental well-being. Artist: Marvin Oliver

About You

Before you begin we would like to ask you to answer a few general questions about yourself by circling the correct answer or by filling in the space provided.

1. What is your gender — Male — Female

2. What is your date of birth? _____ / _____ / _____
   Day Month Year

3. What is the highest education you received?
   None at all
   Elementary School
   High School
   College

4. What is your marital status?
   Single — Separated
   Married — Divorced
   Living as Married — Widowed

5. Are you currently ill? — Yes — No

6. If something is wrong with your health, what do you think it is? ____ illness/problem

Instructions

This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last two weeks. For example, thinking about the last two weeks, a question might ask:

For office use		*(Please circle the number)*				
		Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	**1**	**2**	**3**	**4**	**5**

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others. o

For office use		*(Please circle the number)*				
		Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	**1**	**2**	**3**	**4** ◯	**5**

You would circle number 1 if you did not get any of the support that you needed from others in the last two weeks. o

For office use		*(Please circle the number)*				
		Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	**1** ◯	**2**	**3**	**4**	**5**

Please read each question, assess your feelings, and circle the number on the scale that gives the best answer for you for each question.

For office use			*(Please circle the number)*				
			Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very Good**
G1 / G1.1	1.	How would you rate your quality of life?	**1**	**2**	**3**	**4**	**5**

For office use			*(Please circle the number)*				
			Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
G4 / G2.3	2.	How satisfied are you with your health?	**1**	**2**	**3**	**4**	**5**

The following questions ask about **how much** you have experienced certain things in the last two weeks.

For office use			*(Please circle the number)*				
			Not at all	**A little**	**A moderate amount**	**Very much**	**An extreme amount**
F1.4 / F1.2.5	3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	**1**	**2**	**3**	**4**	**5**
F11.3 / F13.1.4	4.	How much do you need any medical treatment to function in your daily life?	**1**	**2**	**3**	**4**	**5**
F4.1 / F6.1.2	5.	How much do you enjoy life?	**1**	**2**	**3**	**4**	**5**

For office use		(Please circle the number)				
		Not at all	A little	A moderate amount	Very much	An extreme amount
F24.2 / F29.1.3	6. To what extent do you feel your life to be meaningful?	**1**	**2**	**3**	**4**	**5**

For office use		(Please circle the number)				
		Not at all	Slightly	A Moderate amount	Very much	Extremely
F5.2 / F7.1.6	7. How well are you able to concentrate?	**1**	**2**	**3**	**4**	**5**
F16.1 / F20.2	8. How safe do you feel in your daily life?	**1**	**2**	**3**	**4**	**5**
F22.1 / F27.1.2	9. How healthy is your physical environment?	**1**	**2**	**3**	**4**	**5**

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

For office use		(Please circle the number)				
		Not at all	A little	Moderately	Mostly	Completely
F2.1 / F2.1.1	10. Do you have enough energy for everyday life?	**1**	**2**	**3**	**4**	**5**
F7.1 / F9.1.2	11. Are you able to accept your bodily appearance?	**1**	**2**	**3**	**4**	**5**
F18.1 / F23.1.1	12. Have you enough money to meet your needs?	**1**	**2**	**3**	**4**	**5**

For office use		*(Please circle the number)*				
		Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
F20.1 / F25.1.1	13. How available to you is the information that you need in your day-to-day life?	**1**	**2**	**3**	**4**	**5**
F21.1 / F26.1.2	14. To what extent do you have the opportunity for leisure activities?	**1**	**2**	**3**	**4**	**5**

For office use		*(Please circle the number)*				
		Very poor	**Poor**	**Neither poor nor well**	**Well**	**Very well**
F9.1 / F11.1.1	15. How well are you able to get around?	**1**	**2**	**3**	**4**	**5**

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

For office use		*(Please circle the number)*				
		Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
F3.3 / F4.2.2	16. How satisfied are you with your sleep?	**1**	**2**	**3**	**4**	**5**
F10.3 / F12.2.3	17. How satisfied are you with your ability to perform your daily living activities?	**1**	**2**	**3**	**4**	**5**
F12.4 / F16.2.1	18. How satisfied are you with your capacity for work?	**1**	**2**	**3**	**4**	**5**

For office use		*(Please circle the number)*				
		Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
F6.4 / F8.2.2	19. How satisfied are you with yourself?	**1**	**2**	**3**	**4**	**5**
F13.3 / F17.2.3	20. How satisfied are you with your personal relationships?	**1**	**2**	**3**	**4**	**5**
F15.3 / F3.2.1	21. How satisfied are you with your sex life?	**1**	**2**	**3**	**4**	**5**
F14.4 / F18.2.5	22. How satisfied are you with the support you get from your friends?	**1**	**2**	**3**	**4**	**5**
F17.3 / F21.2.2	23. How satisfied are you with the conditions of your living place?	**1**	**2**	**3**	**4**	**5**
F19.3 / F24.2.1	24. How satisfied are you with your access to health services?	**1**	**2**	**3**	**4**	**5**
F.23.3 / F28.2.2	25. How satisfied are you with your mode of transportation?	**1**	**2**	**3**	**4**	**5**

The follow question refers to **how often** you have felt or experienced certain things in the last two weeks.

For office use		*(Please circle the number)*				
		Never	**Seldom**	**Quite often**	**Very often**	**Always**
F8.1 / F10.1.2	26. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	**1**	**2**	**3**	**4**	**5**

Did someone help you to fill out this form? *(Please circle Yes or No)* Yes No

How long did it take to fill out this form? _____

THANK YOU FOR YOUR HELP

DOMAIN SCORES

Domains	WHOQOL-100 Facets	Raw domain score	Raw score range
Domain 1: Physical	Facet 1 + Facet 2 + Facet 3	12 - 60	48
Domain 2: Psychological	Facet 4 + Facet 5 + Facet 6 + Facet 7 + Facet 8	20 – 100	80
Domain 3: Level of Independence	Facet 9 + Facet 10 + Facet 11 + Facet 12	16 – 80	64
Domain 4: Social relationships	Facet 13 + Facet 14 + Facet 15	12 – 60	48
Domain 5: Environment	Facet 16 + Facet 17 + Facet 18 + Facet 19 + Facet 20 + Facet 21+ Facet 22 + Facet 23	32 – 160	128
Domain 6: Spirituality / Religion / Personal beliefs	Facet 24	4 – 20	16

TRANSFORMATION OF SCALE SCORES

The next step involves transforming each raw scale score to a 0-100 scale using the formula shown below:

$$\text{Transformed Scale} = \left\lfloor \frac{\lceil (\text{Actual raw score - lowest possible raw score}) \rceil}{\text{Possible raw score range}} \right\rfloor \times 100$$

where "Actual raw score" is the values achieved through summation, "lowest possible raw score" is the lowest possible value that could occur through summation (this value would be 4 for all facets), and "Possible raw score range" is the difference between the maximum possible raw score and the lowest possible raw score (this value would be 16 for all facets: 20 minus 4).

This transformation converts the lowest and highest possible scores to zero and 100, respectively. Scores between these values represent the percentage of the total possible score achieved. The WHOQOL-100 scores from other Centers may not be transformed to the 0-100 scale. The U.S.WHOQOL instruments and scoring programs have used this transformation to provide comparative data for interpretation.

Example: A Facet 1 "Pain and discomfort" raw score of 15 would be transformed as follows:

$$\text{Transformed Scale} = \left\lfloor \frac{\lceil (15 - 4) \rceil}{16} \right\rfloor \times 100 = 68.75$$

WHOQOL-BREF Scoring

The WHOQOL-Bref, still in field trials, is a subset of 26 items taken from the WHOQOL-100. The same steps for the scoring WHOQOL-100 should be followed to achieve scores for the Bref. Although scoring the Bref is identical to scoring the WHOQOL-100, there are some differences that need to be addressed:

- The WHOQOL-Bref does not have facet scores
- Mean substitutions are recommended for Domain 1 *Physical Health* and Domain 4 *Environment* if no more than one item is coded missing
- Only three items need to be reversed before scoring

The WHOQOL-Bref (Field Trial Version) produces a profile with four domain scores and two individually scored items about an individual's overall perception of quality of life and health. The four domain scores are scaled in a positive direction with higher scores indicating a higher quality of life. Three items of the Bref must be reversed before scoring. They can be seen in Table 9, indicated by the "- (reverse)" denotation in the *Direction of scaling* column.

TABLE 9. Scoring Domains of the WHOQOL-BREF

Domains and questions 236/BREF		Direction of scaling	Raw domain score	Raw item score
Overall Quality of Life and General Health			....(2-10)	
G1.1/B1	How would you rate your quality of life?	+		....(1-5)
G2.3/B2	How satisfied are you with your health?	+		....(1-5)
Domain 1	**Physical Health**		....(7-35)	
F1.2.5/B3	To what extent do you feel that physical pain prevents you from doing what you need to do?	-(reverse)		....(1-5)
F13.1.4/B4	How much do you need any medical treatment to function in your daily life?	-(reverse)		....(1-5)
F2.1.1/B10	Do you have enough energy for everyday life?	+		....(1-5)
F11.1.1/B15	How well are you able to get around?	+		....(1-5)
F4.1.1/B16	How satisfied are you with your sleep	+		....(1-5)
F12.2.3/B17	How satisfied are you with your ability to perform your daily living activities?	+		....(1-5)
F16.2.1/B18	How satisfied are you with your capacity for work?	+		....(1-5)
Domain 2	**Psychological**		....(6-30)	
F6.1.2/B5	How much do you enjoy life?	+		....(1-5)
F29.1.3/B6	To what extent do you feel your life to be meaningful?	+		....(1-5)
F7.1.6/B7	How well are you able to concentrate?	+		....(1-5)
F9.1.2/B11	Are you able to accept your bodily appearance?	+		....(1-5)
F8.2.1/B19	How satisfied are you with yourself?	+		....(1-5)
F10.1.2/B26	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	- (reverse)		....(1-5)
Domain 3	**Social relationships**		....(3-15)	
F17.1.3/B20	How satisfied are you with your personal relationships?	+		....(1-5)
F3.2.1/B21	How satisfied are you with your sex life?	+		....(1-5)
F18.2.5/B22	How satisfied are with the support you get from your friends?	+		....(1-5)

Domains and questions 236/BREF		Direction of scaling	Raw domain score	Raw item score
Domain 4	**Environment**		....(8-40)	
F20.1.2/B8	How safe do you feel in your daily life?	+		....(1-5)
F27.1.2/B9	How healthy is your physical environment?	+		....(1-5)
F23.1.1/B12	Have you enough money to meet your needs?	+		....(1-5)
F25.1.1/B13	How available to you is the information that you need in your daily-to-day life?	+		....(1-5)
F26.1.2/B14	To what extent do you have the opportunity for leisure activities?	+		....(1-5)
F21.2.2/B23	How satisfied are you with the condition of your living place?	+		....(1-5)
F24.2.1/B24	How satisfied are you with your access to health services?	+		....(1-5)
F28.2.2/B25	How satisfied are you with your transport?	+		....(1-5)

If no more than one item from the *Physical Health* or *Environment* domains has been coded as missing, we recommend that a domain score be calculated by substituting a person-specific average across the completed items in the same scale. For example, if a respondent does not have a value for item B16 *How satisfied are you with your sleep?* in the Physical Health domain, but has answered all of the other items in that domain, then the value for item B16 would be the average of the remaining 6 items. If two or more items are coded missing in these two domains, the domain score should not be calculated, likewise if any items are coded missing in the *Psychological* and *Social Relationships* domains, a domain score for that respondent would not be calculated.

After item recoding and handling of missing data, a raw score is computed by a simple algebraic sum of each item in each of the four domains. Once complete, check the frequencies of each domain to be sure that the scores are within the correct range indicated in Table 9 *Raw domain score* column. The next step is to transform each raw scale score using the formula on page 32. The possible raw score ranges for each domain are as follows: *Physical Health*=28, *Psychological*=24, *Social Relationships*=12, and *Environment*=32.

SCORING EXERCISE AND TEST DATASET FOR THE WHOQOL-BREF INSTRUMENT

The purpose of this scoring exercise is to help WHOQOL-Bref users to evaluate results from each step in the process of calculating the Domain summary scores of the instrument. This exercise was created for SPSS users, but with minor modifications, can be adapted for other computer programs or can be useful for those scoring the survey manually.

A test dataset and SPSS code for scoring the WHOQOL-Bref a computer disk in this packet. The test dataset, which is called "**WQ_BREF.TXT**" on the disk, contains data from 64 administrations of the WHOQOL-BREF. The data can be seen in *Appendix F*. The enclosed diskette also provides the user with the SPSS syntax used to:

- import raw data into SPSS format [**WQ_B_DL.SPS**]
- derive the WHOQOL-BREF domain summaries [**WQ_BREF.SPS**]

The SPSS code (called "**WQ_BREF.SPS**") on the disk begins by labeling all items and checking for out-or-range values. It then recodes the 3 negatively stated items so that a higher score indicates better health. The 4 domains are then scored, labeled, and transformed to a 0 to 100 scale used to interpret and compare to other validated instrument tools such as the WHOQOL-100. A copy of the SPSS syntax is reproduced in Appendix F.

Table 10 presents statistics for the transformed domains for the WHOQOL-Bref. After scoring the test dataset, the means, standard deviations, and minimum and maximum observed values should agree with those presented in Table 10

TABLE 10. Test Dataset Descriptive Statistics: WHOQOL-BREF

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Physical (TR	64	32.14	92.86	66.7969	14.5480
Psychological AN	64	37.50	95.83	73.5026	13.7165
Social Relations SF	64	25.00	100.00	73.1771	17.0891
Environment OR	64	28.13	100.00	72.8027	14.1592
Valid N (listwise)	64				

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