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Veterans with Chronic Back Pain Managed in Primary Care: Patient Aligned Care Team

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

Veterans with Chronic Back Pain Managed in Primary Care: Patient Aligned Care Team (PACT) Program Evaluation Project

by

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MSN, Virginia Commonwealth University, 2000

BSN, University of Maryland, 1977

Project Submitted in Fulfillment

of the Requirements for the Degree of

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Abstract

Chronic pain affects approximately 100 million adults in the United States annually, and costs exceeding $635 billion. Pain is the most common complaint in primary care, and chronic pain accounts for up to 16% of emergency room visits. Additionally, chronic pain accounts for 25% of missed workdays annually. Veterans are particularly vulnerable to chronic pain and have an increased incidence of chronic non-cancer pain. Chronic pain for veterans cost the Veterans Administration (VA) about $385 billion each year. This project evaluated the Patient Aligned Care Team (PACT) model to manage chronic lower back pain (CLBP) at a VA primary care center. The framework that guided the project was the theory of planned change and the chronic care model. A retrospective electronic chart review of demographic and pain management data was collected from a convenience sample of veterans (20 women, 20 men) with a history of CLBP managed by the primary care center for at least 1 year prior to and one year after the PACT model was implemented. Overall, the paired-samples *t*-test to was not statistically significant for improvements in veteran reported pain scores over time. However, there was a significant interaction between time and gender that indicates changes over time significantly differed because of gender. In addition, descriptively the mean pain levels were initially higher for men as compared to women, and these levels increased sharply for females over time while the men decreased. This project contributes positively to social change for veterans as the findings indicate an important gender difference in patient reported pain scores over time. There needs to be additional investigation to understand the etiology of the gender difference in the pain outcomes for CLBP.

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Dedication

To my husband, my son Steve, and Anthony Grimes.

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Section 1: Nature of the Project

Introduction

Chronic pain affects approximately 100 million adults in the United States annually, and costs exceed $635 billion each year (McLeod & Nelson, 2013). Pain is the most common complaint in primary care, and chronic pain accounts for up to 16% of emergency room visits (McLeod & Nelson, 2013). Additionally, chronic pain accounts for 25% of missed workdays annually (Jamison & Edwards, 2012). The yearly economic costs can be divided into two categories: the direct costs of health care related to pain and the indirect costs due to decreased economic productivity associated with lost earnings, disability days, and fewer hours worked (Gaskin & Richard, 2012). As a group, veterans are particularly vulnerable to chronic pain (Kerns & Heapy, 2016) and have an increased incidence of chronic non-cancer pain (U.S. Department of Veterans Affairs, 2016).

Of the 23 million U.S. military veterans who are not on active duty, as many as 50% of male and 75% of female veterans experience chronic pain. The VHA provides resources to assist primary care providers with the management of chronic back pain for veterans. Painful musculoskeletal conditions have been identified as a common disorder among veterans returning from the recent conflicts in Iraq and Afghanistan, surpassing the rates of many mental health conditions (Kerns & Heapy, 2016).

The VHA reports similar increases in chronic back pain in veterans who served during the operations in Iraq and Afghanistan (Phelan, van Ryn, Wall, & Burgess, 2009). Furthermore, these veterans present with other types of chronic pain and related

conditions (Outcalt et al., 2014). Veterans often report chronic pain following physically and emotionally traumatic events. Many Iraq- and Afghanistan-era veterans continue to experience progressive pain and posttraumatic stress disorder (PTSD) symptoms. Chronic pain disorders, which often result in health-related disabilities, are a $386 billion annual expense for the VHA (2014). Pain management may require pharmacological interventions, of which opioids are the most common. However, providers are encouraged to prescribe these medications with caution (U.S. Department of Veterans Affairs [VA], 2010). While caring for veterans with chronic back pain, providers are urged to monitor patients and ensure opioids are being used safely. A recent study reported veterans returning from the Persian Gulf have an increased incidence of aberrant use or misuse of prescription opioids and subsequent opioid dependence (Kerns & Heapy, 2016).

This project evaluated the current Patient Aligned Care Team (PACT) model for veterans with chronic non-cancerous back pain who are enrolled at the VHA. Specifically, the evaluation compared patients' reported pain levels pre- and post-implementation of the PACT model in primary care. Prior to the implementation of the PACT model, individual veteran pain management was the responsibility of the primary care providers, and medications such as opioids were the primary treatment options. In 2010, the VHA (2014) implemented a team approach to manage chronic pain. The PACT model offered alternative therapies and disciplines for patient-centered care to improve the quality of life for veterans (VA, 2015).

Currently, the local VHA has 30 PACT teams, and four teams were selected for group medical appointments. The pilot was designed to formalize the current teams within the PACT models to organize the teams and encourage the participation of veterans and other members of the team. The PACT members' roles did not change. However, the responsibilities and accountabilities were clarified. The group medical appointments are scheduled once per month and can accommodate from six to eight veterans during a 1.5-hour time slot. They were designed to improve access to care and encourage teamwork. All members, or a representative from each discipline, are encouraged to attend every meeting. Participation of all members contributes to the success of the team. The members include the veteran and significant other, the primary care clinician, nurse practitioner, or physician's assistant), registered nurses, licensed practical nurses, pharmacist, and psychologist.

The team members and their responsibilities are the following:

- Medical support assistant – scheduling for the veteran and communicates the veteran's needs to the team.
- Pharmacist – explains medication options and opioid use safety; demonstrates the use of Naloxone (Narcan) for the veteran and the significant other.
- Psychologist – discusses the psychosocial impact of pain and schedules individual sessions for the veteran, if needed.

- The primary care provider – coordinates the care with the veteran, implements changes in care as needed, signs an opioid agreement if the veteran is prescribed a controlled substance.

The nurses interview the veteran prior to the initial group meeting to complete a screening note on each veteran, which includes the pain score for that visit, whether or not the veteran is satisfied with the current pain plan, and the veteran's personal goals while managing chronic pain. The veterans are encouraged to develop SMART goals: specific, measurable, achievable, results-focused, and time-bound, meaning the time frame in which the veteran would like to accomplish the goal. The nurses also document data provided by the Virginia Prescription Monitoring Program that consists of data on all controlled medications provided to the veteran in the state of Virginia and surrounding states such as North Carolina and Maryland.

Advanced Practice Nurses (APNs) offer an alternative plan for care and a body of knowledge to assist the VHA with managing chronic health problems. The nature of the project is to evaluate the current model and support the VHA's clinical practice for pain management in primary care. The VHA strives to improve access to care, prevent disease, and contribute to improving health care outcomes while providing patient-centered and evidence-based care. The mission of the organization involves honoring American veterans by providing exceptional health care that improves their health and well-being (VHA, 2014). The VHA has recognized its need to improve chronic health outcomes for veterans and their access to care. The PACT initiative was designed to

address many health problems, and the team concept accommodates more veterans and promotes a group effort. Engaged team members provide a broad range of skills and knowledge, thus working together to improve patient care (Cartmill, Soklaridis, & Cassidy, 2011). Teamwork provides an alternative care model that capitalizes on multiple health professionals collaboratively treating patients with complex needs.

Problem Statement

Local Context for Gap in Practice

The PACT program targeted a gap in pain-management practice by shifting from a primary care provider approach to a specialized team approach. The regional medical center incorporated the new national pain-management practice guidelines while implementing the PACT model to assist veterans who have returned from active service and who are experiencing chronic non-cancer back pain. This project evaluated the effectiveness of the change in practice meant to address a gap in pain management.

Local Relevance and Practice Environment

The practice environment is a VHA hospital with Community-Based Outpatient Clinics. Although many veterans need pain-management education, geographic isolation and physical limitations may preclude many from accessing potentially beneficial resources such as patient pain education (Watson, Cosio, & Lin, 2014). The project evaluates the current pain scores for veterans with chronic back pain enrolled in the VHA. Engaging the organization, veterans, and primary care providers to support the project may require incorporating education and improved and open communication.

APNs are primary care team leaders who provide the team with the knowledge to support the current program and to facilitate change, if indicated.

Significance and Implications for Nursing Practice

Pain is a significant problem in primary care and has a negative impact on a veteran's quality of life. The APN-prepared clinicians are encouraged to engage interventions to assist the veteran within the program and utilize the applications of the foundations within the nursing process. Interdisciplinary collaboration encourages nurses to work with multiple disciplines to implement processes that can improve patient and population health care (American Association of Colleges of Nursing [AACN], 2006). This project aimed to analyze pain score outcomes and contributing factors. The feedback provides the potential to encourage nurses to actively participate in the model and apply the nursing process to maintain the outcomes and support expanding this model.

Purpose Statement

The purpose of this project was to evaluate the evidence-based quality improvement (QI) performance of the PACT model, aimed at improving the pain management of veterans with non-cancer chronic back pain. The evaluation includes a comparison of pre- and post-implementation data including gender, age, and pain levels.

Gaps in Practice

This QI program evaluation reports how the PACT model participants report pain scores in primary care. The purpose of the project was to evaluate the PACT model through examining reported pain scores for veterans with chronic non-cancerous back

pain. Utilizing the PACT model while managing chronic health problems is new to many primary care providers, and the findings can provide useful feedback regarding how veterans report chronic pain in primary care.

Evidence-Based Practice

The Institute of Medicine (IOM [2011]) reported that evidence-based practice (EBP) delivers the most cost-effective health care by combining the best research evidence with clinical practice expertise and patient values and needs. To determine if the literature is evidence-based, scholars need to consider if (a) the current evidence is complete and unbiased; (b) the EBP is sufficient to guide clinical decision-making; (c) the practice is holistic; (d) it adequately contributes to the development of theory or science; (e) it helps to develop nursing; and (f) it respects human dignity, complexity, freedom, and mystery (Baumann, 2010).

The challenge some clinicians encounter is how to overcome barriers that prevent them from incorporating best practices into their clinical practices. Veeramah (2016) suggests clinicians should stay abreast of cutting-edge evidence and that they should be motivated to engage and apply research in their practices. The benefits of EBP care include: (a) improved outcomes for patients, providers, and health care organizations; (b) guidelines identifying the best treatment plans or gold standards for patient care in a selected area to promote quality health outcomes; and (c) guidelines enabling management of patient health problems, preventing illness, and promoting health. However, barriers to the application of evidence-based nursing care have been identified

(Veeramah, 2016). These include (a) the lack of research regarding the effectiveness of many nursing interventions; (b) much research evidence being generated as population data and then being applied in practice to individual patients; (c) translation of the evidence to individual patients being difficult when patients respond in unique ways or have unique needs; and (d) health care providers not understanding the need to engage in best practices or to develop relevant evidence-based protocols, policy manuals, and clinical guidelines for their staff. This project provides new data, evidence, and best practices for primary care that can influence the care provided for veterans with non-cancerous back pain.

PICOT Question

P – Problem / Patient / Population / Place: Non-cancer-related chronic back pain in veteran patients seeking health services at the Veterans Health Administration.

I – Intervention / Indicator / Intended change: PACTs.

C – Comparison / Current standard: the customary primary care driven model, prior to the implementation of the PACTs.

O – Outcome desired: Improved patient-reported pain scores.

T – Type of project / Time: Program evaluation and secondary data analysis from before and after the PACT model implementation.

The project is relevant to determine if the current model improves a veteran's perception of non-cancer-related chronic back pain. The VHA has implemented teams to manage chronic health problems, including pain, and chronic back pain is a condition that

requires ongoing and continuous treatment (Brunswick, 2015). The treatments are pharmacological and non-pharmacological, and the team works together to determine the best plan of care. However, managing veterans with chronic pain in primary care settings is a challenge. Veterans are a unique population who require multiple resources to improve their health outcomes. This project determines, through reported pain scores, if the current pain program efforts by the VHA follow PACT and pain-management practice guidelines. Currently, multiple disciplines offer various modalities to address chronic back pain in veterans. Because primary care providers are challenged with proving safe and effective care, a team model, which encourages the team members to work together, can offer more avenues for health care. The desired outcome of the project was to report that, following implementation of the PACT program, the current team approach had led to improved pain levels.

Clinical Practice Problem

This project is aimed at determining if veterans with non-cancer-related chronic back pain who participate in the PACT program reported different pain scores before and after intervention using the recently implemented PACT model.

Response to the Gap in Practice

The project evaluates the PACT program as an evidence-based intervention to improve pain scores in veterans under primary care who have non-cancer-related chronic back pain. Through the evaluation process, the project provides data on pain scores,

model effectiveness, and areas of weakness. The evaluation reports the gap in practice that is specific to ineffective pain management for veterans.

Nature of the Doctoral Project

Project Sources of Evidence

The sources of evidence for this project included a literature review and a secondary data analysis. The literature reviewed included research and reports specific to chronic back pain management, patient satisfaction, interdisciplinary teams, patient-centered care, and evidence-based pain programs. The secondary data analysis included data specific to the PACT program, including pain scores and patient satisfaction. The evaluator recorded the patient-reported pain scores from before and after implementation of the PACT model from veterans with chronic non-cancer back pain.

Project Method

The project provided a descriptive retrospective electronic chart review to evaluate any changes in the pain scores. This section includes an explanation of the data collection tools and how the data were collected and analyzed.

Project Pathway

The VHA established PACT to address chronic health problems, including chronic back pain, and during each visit, the veteran's pain scores are recorded in an electronic health record along with age and gender information. I compared and analyzed the pain scores of veterans before the implementation of PACT and 1–4 years post-implementation of a PACT-based pain program. Veterans were included based on the

following criteria: a history of low back pain unrelated to cancer, enrolled in primary care both before and after the model implementation.

Significance for Nursing

DNP-prepared nurses can translate research into practice while working within teams to assist their organizations with leadership, quality improvements, and systems thinking (AACN, 2006). Nurses facilitate teamwork to improve the performance, effectiveness, efficiency, and communication that enhance loyalty to the organization (Woods & Magyary, 2010). The VA is advocating independent practice for nursing to improve access and the quality of care. The organization's leadership aims to determine if such independent practice will positively impact the areas of quality of care, staff burnout**,** access to care, and opportunities for nurses to research and apply best-practice, evidence-based care (Woods & Magyary, 2010). The current state of research suggests that nurses should take the time to keep current on evidence-based and patient-centered care in order to improve patient outcomes and nurse satisfaction. The organization can improve the application of research into practice by recognizing nurses and other health care providers who do so and by applying innovative ideas to assist patients, health care providers, and the organization.

The primary care team has the potential to advance the care and treatment provided to patients, improving health outcomes and patient and provider satisfaction. Managing pain is a significant problem for health care teams in primary care, which can negatively affect veterans' quality of life.

Stakeholder Analysis

The stakeholders are the members of the PACT model, who provide feedback on how the program meets their needs and those of the organization, and the veterans, who provide feedback on their perception of the current pain program and how it meets their needs. The DNP providers are encouraged to work with the organization to offer solutions to address the problem of chronic pain. The nurse executives are in an ideal environment to advocate for nurses engaging in plans to assist veterans in improving their overall health and quality of life. Nurses are encouraged to participate in an appreciative inquiry process while utilizing the SOAR (strength, opportunities, aspiration, and results) framework. This framework will encourage the next generation to see value in how nurses come together and contribute by expressing pride in the work that they do for other nurses, patients, and the organization (Wadsworth, Felton, & Linus, 2016).

Contributions to Nursing Practice

The main strategy involves the integration of government agencies to reinforce education regarding the need to address pain management. The National Institutes of Health (NIH) contracted with the IOM to undertake a study and develop recommendations to increase the recognition of pain as a significant public health problem in the United States (IOM, 2011). In 2011, the IOM report called for a “cultural transformation” in pain prevention, care, education, and research, and recommended the development of a comprehensive population-level health strategy to address the issues of managing pain (IOM, 2011). In response to the report, the Department of Health and

Human Services requested that the Interagency Pain Research Coordinating Committee oversee the development of this national pain strategy (Porter, Sankar, & Schwetz, 2011). Experts from public and private organizations explored areas identified in the core IOM recommendations, including population research, prevention and care disparities, service delivery and reimbursement, nurse's professional education and training, and public awareness and communication. A combined effort is underway to address the IOM's call for further research to support the "cultural transformation" to reduce the burden of pain in the United States (IOM, 2011). APNs provide the nursing knowledge, skills, and education to implement the IOM recommendations by improving access to care while working within their full practice authority (AACN, 2006). Acknowledging that pain is a national, state, and local problem provides a foundation for applying the research in practice.

Transferability of Knowledge

The evaluation of the current pain program provides meaningful data to assess whether the outcomes are met for veterans with chronic back pain, but also provide a framework to evaluate other chronic health problems. Currently, many providers utilize pain medications, including opioids, to address pain (VHA, 2014). Teamwork allows for alternative ideas for treating chronic pain, which is important in providing care for our veterans. Interdisciplinary collaboration is critical for the design, implementation, and success of improving health care outcomes. The 2010 Patient Protection and Affordable Care Act requires health care providers to reduce costs while improving health care

quality (Jeon & Benavente, 2016). The patient-centered team approach to managing chronic health problems is emerging as an effective method for improving patient behavior by empowering the patient to be at the center of their own health care. A well-planned and collaborative team provides a foundation from which to guide patients (Jeon & Benavente, 2016). The team setting for this project provides a unique opportunity to provide care for patients with many chronic health problems.

Implications for Positive Social Change

Veterans with chronic pain require the health care team to understand their unique needs and to adjust the plan of care to recognize the social, physical, and mental health adjustments veterans make to become acclimated to their surrounding communities. Social change requires individuals to embrace how different we are while acknowledging we share common goals. This change requires seeking new knowledge and applying that information to improve how we interact with veterans and other members of the health care team. Resistance to change is a primary challenge to the integration of knowledge. Individual-level barriers, such as training or allocating adequate time for knowledge integration, must be overcome for it to be successful. Organizational environments that downplay reporting hierarchies, resulting in greater openness and a shared culture, are more favorable to knowledge management strategies. Although managerial support is crucial for success, support from other departments improves the outcomes for veterans. An important consideration is a clear knowledge management framework or strategy that

incorporates human factors to promote social change (Kothari, Hovanec, Hastie, & Sibbald, 2011). The challenge is how to work together as a team to embrace change.

Interdisciplinary teams offer unique ways of practice and have several advantages. Sharing medical care with others from various areas of expertise provides meaningful interaction and makes problem-solving reasonable. However, several barriers exist, such as group dynamics, commitment, and individual accountability. The team model differs depending on the makeup of the team, the number of participants, and the willingness to participate in a group (Jeon & Benavente, 2016).

Summary

Chronic pain is a significant problem in primary care in the local context and is a concern for veterans and for the practice environment. The VHA is one of many organizations that engage teams to provide health care. The VHA implemented the PACT model to manage patients with chronic health problems, and the PACT's aims are to improve health outcomes through team-based care, improved access, and care management (Nelson et al., 2014). The outcome measures examine patient satisfaction, rates of hospitalization and emergency room usage, quality of care, and staff burnout (VHA, 2014). This project evaluates outcomes to determine if the program met the intended goals while affecting patients' perception of pain.

Section 2: Background and Context

Introduction

The problem addressed in the project evaluated the current PACT model for veterans with non-cancer-related chronic back pain who were enrolled at the VHA PACT. Specifically, the evaluation compared reported pain levels pre- and post-implementation of the PACT. Prior to the implementation of the PACT model, individual veteran pain management was the responsibility of the primary care providers, and medications such as opioids were the primary treatment options. In 2010, the VHA (2014) implemented a team approach to managing chronic pain. The PACT program offered alternative therapies and disciplines for providing patient-centered care to improve veterans' quality of life and manage their pain (VA, 2015).

The purpose of this project was to conduct a QI performance evaluation to determine if the current PACT model improved pain scores in the primary care setting for veterans with non-cancer-related chronic back pain.

Theories, Frameworks, Models, and Concepts

Theory of Planned Change

The Theory of Planned Change was developed by Kurt Lewin in the early 1950s. According to Lewin (1951, as cited in Shirey, 2013), there are two forces involved in change: the driving forces and the restraining forces. Driving forces encourage or facilitate movement toward a new direction, goal, or outcome. The restraining forces have the opposite effect, blocking or impeding progress toward a goal. Kotter (1999)

expanded upon Lewin's theory by suggesting a more detailed approach, adding the phases of unfreezing change, movement, and refreezing to Lewin's model (Shirey, 2013). Kotter analyzed the eight necessary steps that managers must take when initiating change in their organization: (1) create a sense of urgency; (2) form coalitions to have enough power to change; (3) create a new vision to direct change; strategies must be developed to achieve a new vision; (4) communicate the new vision purposefully and effectively throughout the organization; (5) remove barriers to change, empower others to act in the new vision, and encourage an atmosphere of creativity and risk taking; (6) plan rewards for short-term "wins" when the organization begins to move toward the new vision; (7) continuously assess the effects of the change and make adjustments as necessary; and (8) reinforce the changes linking new behaviors to the organization's success (McEwen & Wills, 2007). The Planned Change theory was used to evaluate if the implementation of PACT had an impact on patients' pain scores and satisfaction. The Theory of Planned Change provided the framework to evaluate the program before the PACT model implementation while simultaneously observing the changes, finding ways to maintain them, and improving how the team worked together to improve pain scores.

Chronic Care Model

The Chronic Care Model (CCM) has guided QI projects specific to chronic care for more than 25 years (Jeon & Benavente, 2016). Pain is a chronic problem that impacts the quality of life for veterans, and the model provides a tool to evaluate if the PACT program impacts pain scores and patient satisfaction. The CCM promotes a team

approach that supports pain management in the delivery of effective chronic pain care management. The 2010 Patient Protection and Affordable Care Act provided health care access to millions of Americans, yet the supply of primary care providers has decreased. Teamwork offers the opportunity to care for the increased population of newly insured, and the CCM offers a framework that allows a team to achieve multiple goals. The team size will vary and will influence the group dynamics. The intimacy of smaller groups may allow for a focused discussion, but a larger group of 10 or 16 provides for broader patient interaction and the efficient use of medical staff resources (Jeon & Benavente, 2016). Teamwork improves performance, effectiveness, efficiency, morale, and job satisfaction (Warrick, 2014). The CCM is useful for PACT model development and when working with others to establish and maintain positive, productive teamwork. The model assists with ways to improve the current PACT while managing chronic pain. Planning for changes is important for the team to maintain a professional work environment. The team concept provides the opportunity to improve the efficiency of providing primary care for many chronic health problems. Patients in primary care present with complex medical problems that require a systematic, organized approach to care management (Bodenheimer, Wagner & Grumbach, 2002).

Terms and Definitions

- Advanced Practice Nursing (APN): Registered nurses with advanced nursing education (AACN, 2006).

- Evidence-Based Practice: A conscientious integration of best research evidence with clinical experience and patient values and needs in the delivery of quality, cost-effective health care (McEwen & Wills, 2007).
- Hospital Consumer Assessment Provider System : Multiple disciplines working together to provide best-practice, evidence-based care (Woods & Magyary, 2010).
- Hospital Consumer Assessment Provider System : A VHA initiative to provide patient-centered, team-based care coordination for veterans with chronic health problems (VHA, 2014).
- Practice-Focused Nursing: Any form of nursing intervention that influences health care outcomes for individuals or populations, including the direct care of individual patients and managing health care, the administration of nursing, and the development and implementation of health policy (AACN, 2006).

Project Relevance to Nursing Practice

DNP-prepared nurses have the knowledge to translate research into practice while working within teams to assist the organization with leadership, quality improvements, and systems thinking (AACN, 2006). This project incorporated four of the eight DNP essentials, which are organizational and systems leadership for quality improvement and systems thinking, clinical scholarship and analytical methods for evidence-based practice, intra-professional relationships for improving patient and population health outcomes, and clinical prevention and population health for improving the nation’s health.

Nurses facilitate teamwork to improve performance, effectiveness, efficiency, and communication, and these aspects of teamwork enhance loyalty to the organization (Woods & Magyary, 2010). The VHA encourages nurses to provide independent practice to improve access and the quality of care. The current state of nursing suggests engaging in evidence-based and patient-centered care. Strategies for improving the teams include encouraging other health care providers to embrace change and applying innovative ideas to assist patients, health care providers, and the organization.

The interdisciplinary team approach has the potential to advance the care and treatment provided to patients to improve health outcomes as well as patients' perception of pain. APNs offer a unique body of knowledge to assist the organization to manage chronic pain within teams.

Literature Review

Introduction

The purpose of the literature review was to identify the sources that provide data on chronic back pain, contributing factors, and teams. I examined the research on back pain in the general population for this project primarily due to the large quantity of available evidence. The evaluation was done to determine whether a current pain program met the intended outcomes while improving pain scores. The structured format of the literature review identified the specific population and anticipated intervention, analyzed the current standards, and identified the desired outcomes.

Search Strategy

The search strategy identified databases and search engines used to find outcomes and research related to the problem. The search was not exhaustive (e.g., a systematic review); instead, this review was conducted in a systematic manner and focused on key terms from the PICOT (population, intervention, comparison, outcome, and time-framed) question. The general search produced existing peer-reviewed papers and government reports specific to the project to provide a brief history of the problem. This included research papers providing data about the current state of practice in which this doctoral project is embedded.

The literature review identified research that was explicit, unbiased, and reproducible. The exclusion criteria were set as follows: non-English and product- or drug-company-endorsed papers. The inclusion criteria were set as follows: English, full-text, abstracts, and evidence- or practice-based texts. The biographical databases used were the Cumulative Index to Nursing and Allied Health Literature full-text abstracts on PubMed, the Cochran Databases of Systematic Review, ProQuest Nursing and Allied Health Services, Medline with full-text abstracts, PubMed, and Health and Medical Complete. The search terms included the following: veterans chronic pain, interdisciplinary teams, patient medical home, patient satisfaction, pain treatments, opioid dependence, and primary care. Centers for Disease Control and Prevention, Healthy People 2020, the World Health Organization, and research publications by the NIH and the VHA constituted the research and professional organizations that were included. A

review of 200 abstracts and 100 full-text articles was conducted. Of these, 56 articles met the criteria for an extensive review. A further 45 articles were included in the project. The time frame for the search included data from the last 10 years.

The identified resources were evaluated by identifying the citation, selecting the main findings, and noting the research methods and conceptual framework or theory, if appropriate. The information provided reports with varying levels of evidence. Research limitations restricted the data on the comparison of veterans from different war zones or conflicts (e.g., Vietnam, Iraq, or Afghanistan), the length of time in combat, or the relevance of other mental health issues that may have contributed to the perception of pain.

General Literature

General literature was searched to find information on chronic non-cancerous back pain in the general population as well as among veterans, pain assessment methods, and quality indicators for patient satisfaction. In their 2012 study, Jamison and Edwards noted that chronic pain accounted for 25% of missed workdays annually, affected approximately 100 million adults in the United States, and that costs exceeded $635 billion each year. They also reported on the challenges of pain management in primary care. It was estimated that 70% of patients with chronic pain are managed in primary care. Chronic pain was a key reason for consulting primary care, accounting for 22% of presenting conditions. Patients with chronic pain consulted their primary care services five times more than patients without pain. However, 40% of chronic pain patients did

not achieve pain relief. Another study (McLeon & Nelson, 2013) found that pain was the most common complaint in primary care and that chronic pain accounted for up to 16% of emergency room visits. A large survey conducted in 13 European countries showed that primary care providers found chronic nonmalignant pain a challenge to treat. The study recommended training in the use of assessment tools and the appropriate prescription of opioids (Jamison & Edwards, 2012).

Chronic pain assessment, treatment, and the evaluation of back pain require offering treatments that are safe and effective. Veterans are a unique population that require multiple resources to address their needs, and providers must consider the contributing factors that are related to service in a war zone that may affect their pain scores. While treating, providers must address a veteran's satisfaction with their care and strive to improve their quality of life. The VHA implemented the PACT initiative to maximize resources that are patient centered and team based (2014).

Chronic back pain is a significant problem for many veterans seen in primary care. The experience of pain affects veterans' physical, mental, and social well-being, and veterans who served in Iraq and Afghanistan report increased pain when they are screened for PTSD. There are a number of hurdles to improving the outcomes for veterans with chronic pain and PTSD. A number of studies highlighted how chronic pain and PTSD occurred at high rates and how veterans from recent wars in Iraq and Afghanistan may be particularly vulnerable to both conditions (Outcalt et al., 2014; Hoon et al., 2016; Rasu, Sohraby, Cunningham, & Knell, 2013). One objective of my study was

to identify key aspects of chronic pain, cognition, and psychological distress associated with comorbid PTSD among the sample of veterans. Baseline data were analyzed using randomized controlled trial testing of a stepped-care intervention for chronic musculoskeletal pain for veterans who served in Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF). Veterans with chronic pain only (n = 173) were compared with those with chronic pain and clinically significant posttraumatic stress symptoms (n = 68). Group differences in pain characteristics, pain cognitions, and psychological distresses were evaluated. Results demonstrated that OIF/OEF veterans with comorbid chronic musculoskeletal pain and PTSD experienced higher pain severity, greater pain-related disability, increased pain interference, more maladaptive pain behaviors, and greater mental health distress than those who reported pain without the contributing factors.

Veterans of OIF/OEF may be particularly vulnerable to the compounded adverse effects of chronic pain and PTSD. These results have highlighted a more intense and disabling pain and psychological experience for those with chronic pain and PTSD than for those without PTSD (Outcalt et al., 2014). Veterans with chronic pain require a systematic approach that maximizes treatment to address pain and its contributing factors. Veterans have acknowledged that pain medication has been prescribed over many years and report being concerned that the national, state, and local focus on pain medication use has created attempts to limit opioid use without a timely alternative (VA, 2017).

Specific Literature

The VHA created teams to address chronic health problems like back pain, to support efforts for the VHA, and to maintain compliance with the PACT and pain-management practice guidelines**.** My research sought to find data that supported teams as an application to assist veterans with chronic back pain, and the search included data on teams, primary care, and pain assessment for veterans who had been assigned to a team. Bowers (2011), Cartmill et al. (2011), and Warrick (2014) all supported the theory that interdisciplinary teams offer unique ways of practice and have several advantages. Sharing medical care with others who provide expertise for meaningful interaction has made problem-solving easier (Jeon & Benavente, 2016). However, several barriers have arisen, including group dynamics, commitment, and individual accountability. The team model has differed, dependent as it is on the makeup of the team, the number of participants, and the willingness to participate in a group (Jeon & Benavente, 2016). Primary care providers who manage patients with complex chronic medical problems can best manage them by using the CCM. The model was designed to provide team-based, patient-centered care and provide a sense of urgency to encourage positive change (Shirey, 2013). The VHA incorporated PACT to improve the delivery of care and the outcomes for the veteran with chronic health problems (Bidassie, Davies, Stark, & Boushon, 2014; Chuang et al., 2017; LaVela & Hill, 2014).

Zulman et al. (2016) and Shaikh and Östör (2015) reported on how intensive outpatient care for high-needs patients did not reduce acute care utilization or costs

compared with standard VA care, although there were positive effects on the experience among patients who participated. Implementing intensive outpatient care programs in integrated settings with well-established medical homes may not prevent hospitalizations or achieve substantial cost savings.

Multiple tools were selected to monitor patient satisfaction. The VHA has enhanced chronic care management in the PACT model, accomplishing this while evaluating the patients' perception of pain to monitor the pain levels (VHA, 2014). Pain is rated at the VHA using the NPRS, which encourages veterans to rate their pain on a scale from 0 to 10, with 0 indicating no pain and 10 indicating the worst pain they have experienced. Hjemstad (2001) reported there is extensive literature regarding the use of pain rating scales, verbal rating scales, and visual analog scales dating back to the 1950s. Nearly all this literature originated from the social sciences, notably from censuses, surveys, public opinion polls, and marketing research. The data suggest that the tool is acceptable for measuring pain. However, the user should be cautioned about using this method exclusively for pain assessment. The method has presented user errors, such as the time frame used in the method of administration, information related to the use of the scale, interpretation of the cut-off points, and clinical significance. The staff screening patients should be given a recommendation to verify responses regarding the pain level at the actual primary visit. Further, patient responses were often linked to patient satisfaction (Chien, Bagraith, Khan, Deen, & Strong, 2013).

In this study, patient satisfaction was measured with the Press Ganey Hospital Consumer Assessment Provider System, and real-time feedback and data from patients and staff were provided. The areas of focus were as follows: courtesy and sensitivity of the staff, being informed about the health care decision wait time, pain control, and caring **(**Hwang, Lipman, Grant, Kane, & Marlena, 2015). The VHA provided electronic health record data sources for examination of the prevalence, treatment, and outcomes of pain among veterans in the organization (Abel, Brant, Czalpinski, & Goulet, 2016). Also provided were a computerized record system and administrative records to identify the veterans' medications, types of pain, diagnosis, active problem lists, and other contributing factors to pain (Lisi, Burgo-Black, Kawecki, Brandt & Goulet, 2014).

Local Background and Context

The purpose of the project was to determine if the PACT model has had an impact on pain levels for veterans in primary care. The project is aligned with the goals of the organization. The mission of the organization involves honoring American veterans by providing exceptional health care that improves their health and well-being (VHA, 2014). The VHA has recognized the need to improve chronic pain-management outcomes for veterans and their access to care. Support structures for change and sustainability are provided in the forms of staff, equipment, policies, procedures, communication, and the team members' job descriptions (Parsons & Cornett, 2011). The VHA also supports plans that demonstrate an improvement in the quality of health care (Pronovost & Lilford, 2011). In fact, the PACT initiative was designed to address many

health problems, and the team concept accommodates more veterans and promotes team-based care.

Local Terms and Definitions

- Clinical Practice Guidelines – EBP best-practice protocol for managing patients with chronic health problems (VHA, 2014).
- PACT – a team that is designed to include health care members who provide expertise to veterans with chronic health problems (VHA, 2014).

State and Federal Context

The state of Virginia has reported an increase in heroin and opioid overdoses (McAuliffe, 2014)**.** In 2014, Governor Terry McAuliffe reported that, for the first time in Virginia, more people died from opioid overdoses than from car accidents. On average, three Virginians die from accidental drug overdoses each month, and more than two dozen overdose cases are seen in emergency rooms**.** Prescribing controlled substances requires health care providers to adhere to state and national mandates that urge a decrease in the monthly supply of controlled substances and that providers ensure vigilant, safe prescribing. The VHA recently published guidelines based on the mandates. In Virginia, prescribers must complete mandatory training on safe opioid prescribing to maintain credentialing at a hospital and for license renewal.

Role of the DNP Student

The practice setting for this project, and my practicum site for the DNP program, is the VHA. I am assigned as a primary care nurse practitioner at the facility. The role

will provide me the opportunity to lead the PACT program for veterans with chronic back pain as its primary care provider representative.

Motivation for Completing the Project

Chronic pain affects large numbers of people in our society, and I wanted to determine if, as a health care provider, I understand how, within teams, we are addressing patients with chronic pain in our hospital. I served our country for 23 years as an Army officer, providing care for soldiers before and after back injuries during the Persian Gulf War, and was witness to traumatic events. Therefore, as a veteran and a primary care provider, I have some insight into the unique challenges veterans may face. However, I have constraints on my time from the increased complexity of patients and government documentation policies. I want to determine if, as a primary care provider, I am utilizing the team-based, patient-centered model to its full potential.

Potential Biases

The potential bias to the project is the risk I would think I had the answers before the research was completed or that I had the solutions prior to addressing the findings. To prevent influencing the results, I implemented the following steps: (a) avoid any influence in the study that could distort or slant the findings away from the true or expected results; (b) maintain objectivity, integrity, and remain vigilant to present the findings without alterations; (c) report with clear accuracy; (d) report positive and negative findings; and (e) ensure the research is reproducible.

Summary

Chronic back pain is a significant problem for veterans seen in primary care. The VHA has acknowledged that veterans require multiple disciplines to assist in managing health care outcomes and that teams offer an alternative care model. Pain affects veterans' physical, mental, and social health, but further, they are a unique population who are challenged with multiple health care problems related to the military service environment. Veterans who served in Iraq and Afghanistan report increased pain when they are screened for PTSD and other contributing conditions. The VHA is a pioneer in engaging teams and identifying plans to address these concerns. As a result, in 2010, the PACT program was implemented, a patient-driven model of care with four basic components to promote the health of veterans—veteran-centered care, multiple methods of access to care, better teamwork, and coordinated veteran care among team members (VHA, 2014). PACT aims to improve health outcomes through team-based care, improved access, and care management (Nelson et al., 2014). This project was an evaluation of the current PACT model to compare pain scores prior to and after implementation of the team.

The team approach offers the opportunity to utilize multiple resources to assist veterans in the pain-management programs. Multiple resources and teamwork offer improved access to other members of the health care team. The sources of evidence from this project were supported by a combination of studies, including a scoping review of the literature and expert opinions from peer-reviewed journals. The accumulated

evidence supports the importance of assessing back pain and acknowledges contributing factors to improving care through teams and methods for monitoring patient perception of pain. Therefore, the project may serve as an integrated framework to guide a practice design that will lead to improved patient care and better health outcomes in this challenging veteran group.

Section 3: Collection and Analysis of Evidence

Introduction

This project evaluates how the current PACT model is working for veterans with non-cancer-related chronic back pain who are enrolled in the VHA PACT. Specifically, the evaluation compared reported pain levels pre- and post-implementation of PACT. Prior to the implementation of the PACT initiative, individual veteran pain management was the responsibility of the primary care providers, and medications such as opioids were the primary treatment options. In 2010, the VHA (2014) implemented a team approach to manage chronic pain with the PACT program, which offered alternative therapies and disciplines to provide patient-centered care that could improve the quality of life for veterans and help manage their pain (VA, 2015). The project practice question considered is if, in veterans with non-cancer-related chronic back pain, there have been changes in reported pain scores before and after the implementation of the PACT program.

The sources of evidence collected were designed to research the problem of veterans with chronic back pain and the pain programs and interventions used to treat them, the teams handling the treatment, and the patient's satisfaction afterward. The approach was analysis of the data and reporting of findings on pain scores and contributing factors to pain. The outcomes that were reported were patient pain levels. The purpose of the project was to use a QI program evaluation to determine if the PACT program improved pain scores for veterans with chronic back pain and to then connect

the anticipated findings with gaps in practice. In turn, the gaps will address how teams facilitate the goal of improved outcomes.

The outcome of the project was determining if the current model that uses teams impacted patients' pain levels in those patients with chronic back pain. The project was an evaluation of a current program while conducting a retrospective chart review on secondary data.

In this section, a description of the retrospective chart review and the evaluation of the current pain program are given, along with a discussion of the rationale for choosing each in this context. In addition, I discuss the methodology for this study, including a description of the participants, how the participants were selected, the researcher's role, and ethical issues. This section also includes an explanation of the data collection tools as well as how the data were collected and analyzed.

In this QI program evaluation using secondary data for veterans in a retrospective electronic chart review. The evaluator selected patients who had reported having chronic back pain for at least 1 year. The measurement utilized the pain scores currently available in health records, and the data collected include pain score, age, and gender. The data were collected from the screening page of the Computerized Patient Records System.

Practice-Focused Question(s)

In veterans with non-cancer-related chronic back pain, what pain levels did PACT program participants report before the intervention and what pain levels did they report post-intervention?

Project Purpose and Method Alignment

Chronic back pain is an acknowledged problem for many veterans seen in primary care. Prior to the implementation of the VHA's PACT program, primary care providers focused on medication, usually opioids, to manage pain. As a result, numerous veterans became addicted or dependent on opioids (American Legion, 2013). The VHA has acknowledged that numerous disciplines are required to assist veterans.

This project will evaluate the effectiveness of the current pain program in meeting the intended outcomes using data collected in a retrospective chart review and a review of current VHA research publications and then report findings on the current primary care pain program. An assessment of veterans' pain offers the opportunity to evaluate their perception of pain and their satisfaction with the current pain program.

The purpose of this project was to determine if veterans in the current PACT program report improved pain scores. The leadership at the VHA in question recognizes that teamwork provides an alternative care model that capitalizes on multiple health professionals collaboratively treating patients with complex needs. The current program utilizes the PACT model to provide better teamwork. The PACT model, implemented in 2010, is a patient-driven model of care with four basic components that combine to promote the health of veterans: veteran-centered, multiple methods of access to care, better teamwork, and coordinating care among team members (VHA, 2014). The research method was a retrospective electronic chart review from secondary data of subjects with

non-cancer-related chronic back pain. The research conducted described the subject's age, gender, and level of pain.

Key Operational Definitions

- SPSS – The Statistical Package for the Social Sciences is widely used statistical software. It was used to analyze the de-identified data.
- Data analysis – A systematic synthesis of the research data to determine if the team implementation tests the clinical hypothesis that teams improve pain scores.
- Correlational data – to determine a bond between variables.
- Data set – the collection of data on all variables for the entire participant sample.
- Descriptive statistics – the statistical methods used to describe and summarize the data (e.g., means, percentages, standard deviation).
- Dependent group *t* test – comparing the pain scores of patients with chronic back pain before the implementation of PACT.
- P-value – a test of significance that gives the probability that the pain score results are due to chance and the probability of committing a Type I error.

Sources of Evidence

Evidence collected was designed to research the problem of veterans with chronic back pain, pain programs and interventions, teams, patient satisfaction, and health outcomes. The approach was to analyze the data and report the findings on pain scores and the contributing factors to pain, while the outcome was to report on patient pain

levels. I reviewed pain scores available on the screening page of the electronic health record.

Archival and Operational Data

The project is a retrospective electronic chart review of secondary archival data using a convenience sample of veterans under primary care who have chronic low back pain. A retrospective review of secondary data, including patient records, was conducted to evaluate the efficacy of the PACT model in managing chronic non-cancer-related back pain. Data collection included patient age, gender, and pain scores. The data requested were obtained in the Computerized Patient Record System on the screening page of the electronic health record. All data were de-identified to protect the confidentiality of the patients, and data were stored in a password-protected spreadsheet.

Description of Data Collection

Participants in this QI project included veterans who had experienced back pain for at least 1 year and who were assigned to a PACT before and after implementation. The retrospective electronic chart review project selected 40 subjects from the electronic health record. Pain levels for the subjects included measurements from 1 to 4 years before the pain program started and at least 1 to 2 years after implementation of the program. Descriptive statistics were used to describe the patient sample. De-identified demographic data were collected and evaluated, including information on gender, age, and pain scores.

Participants

Participants in this study were veterans who had experienced back pain for at least 1 year and who are assigned to a PACT. Forty patients were selected from a convenience sample, and patient selection was based on data that reflected the average number of patients who reported pain, suggesting an average of 40 patients for each primary care provider with an assigned panel size of 1,200 veterans (VHA, 2014).

Protections

All data were de-identified to protect the confidentiality of the patients. Data were stored in a password-protected spreadsheet. The subjects' names, social security numbers, or other identifiers were not recorded or evaluated. The VA and the Walden University investigational review boards reviewed the project to verify procedural and ethical standards were met. The VHA QI representative at the current location granted permission to access the data.

Analysis and Synthesis

Descriptive statistics were used to describe the patient sample. Demographic subject information included age and gender. Data were collected for the 1 to 4 years before the PACT program intervention and for at least 1 to 2 years after its implementation. A paired *t* test was used to evaluate the difference in pain scores before and after the intervention.

Data Integrity

The forty veterans who are the subjects of this study were selected after they had been de-identified. The VA requires that all project tools and data will remain the property of the organization for at least 6 years. The statistical analysis included *t* tests to test the predicted value of the pain scores in the veteran population after PACT implementation, and a paired *t* score was used to note the differences in scores before and after the PACT implementation. Demographic data were evaluated to determine if age, gender, or patient satisfaction impacted pain scores.

Section 4: Findings and Recommendations

Introduction

This chapter reports and discusses the results of the analyses conducted for this study. Initially, a series of descriptive statistics were conducted in order to illustrate the characteristics of the sample as well as to present the distribution and responses to these questions. These analyses consisted of a series of figures, bar charts, and histograms focusing on the measures of interest included in this study, which consisted of pain levels and the demographic measures of respondent gender and age. Following this, a series of inferential statistical tests were conducted on these data. These tests consisted of a paired-samples *t* test conducted to determine whether there was a significant difference between the "before 2008" and "before 2009" measurements. Additionally, a repeated-measures general linear model was used to focus on whether there were significant changes over time with respect to pain, along with an analysis of the impact of respondent age and gender, and any associated interactions, on pain measurements.

Findings

Initially, a series of descriptive statistics were conducted on these data. Bar charts were constructed on the categorical measures of interest included in this study, with a histogram constructed for respondent age. First, the following figure illustrates mean pain levels over time. As shown, this was found to be lowest before 2009, moderately higher before 2008, and highest currently.

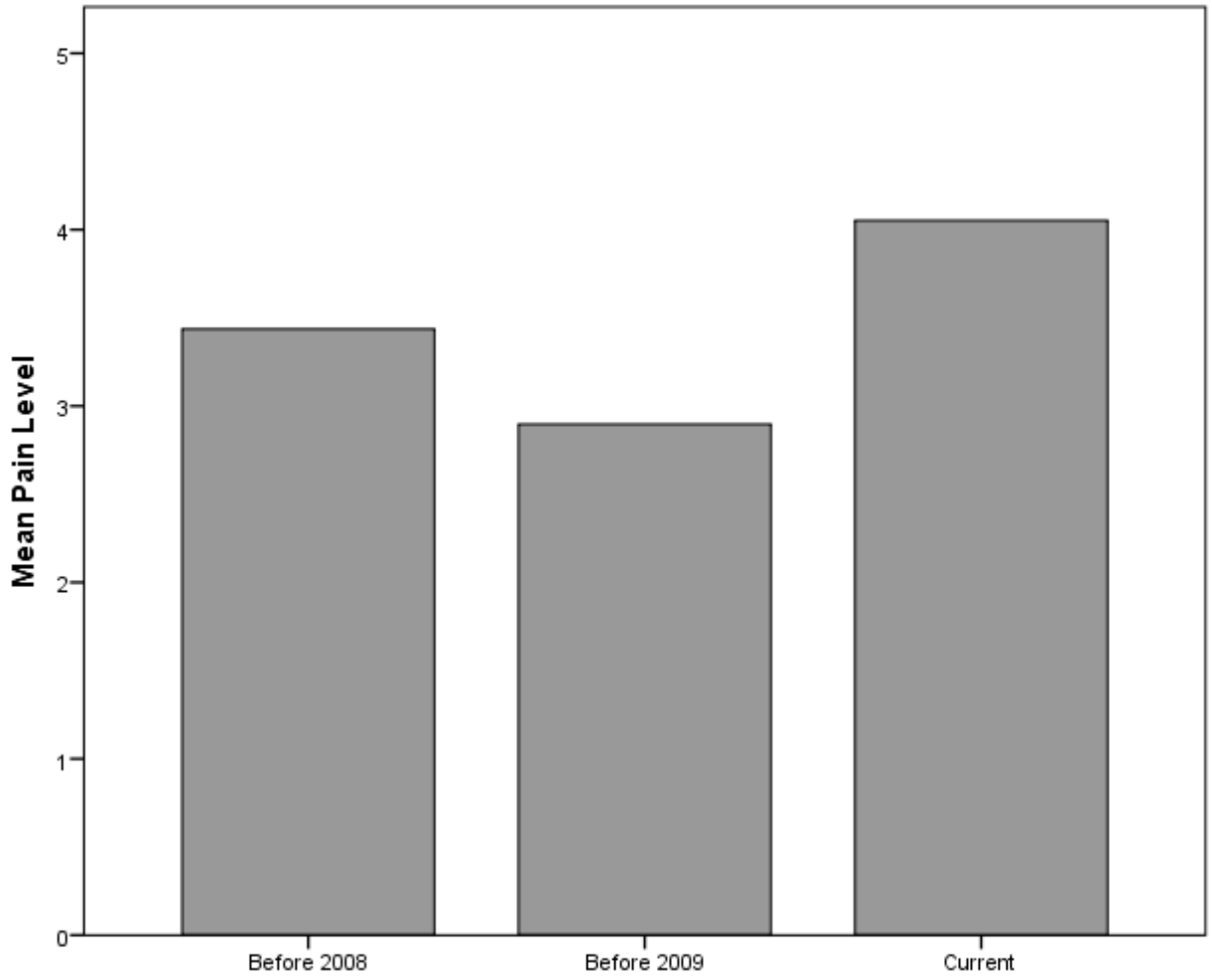

Figure 1. Mean pain levels.

Next, with regard to respondent gender, the sample was found to be evenly split between males and females, with 20 male respondents and 20 female respondents.

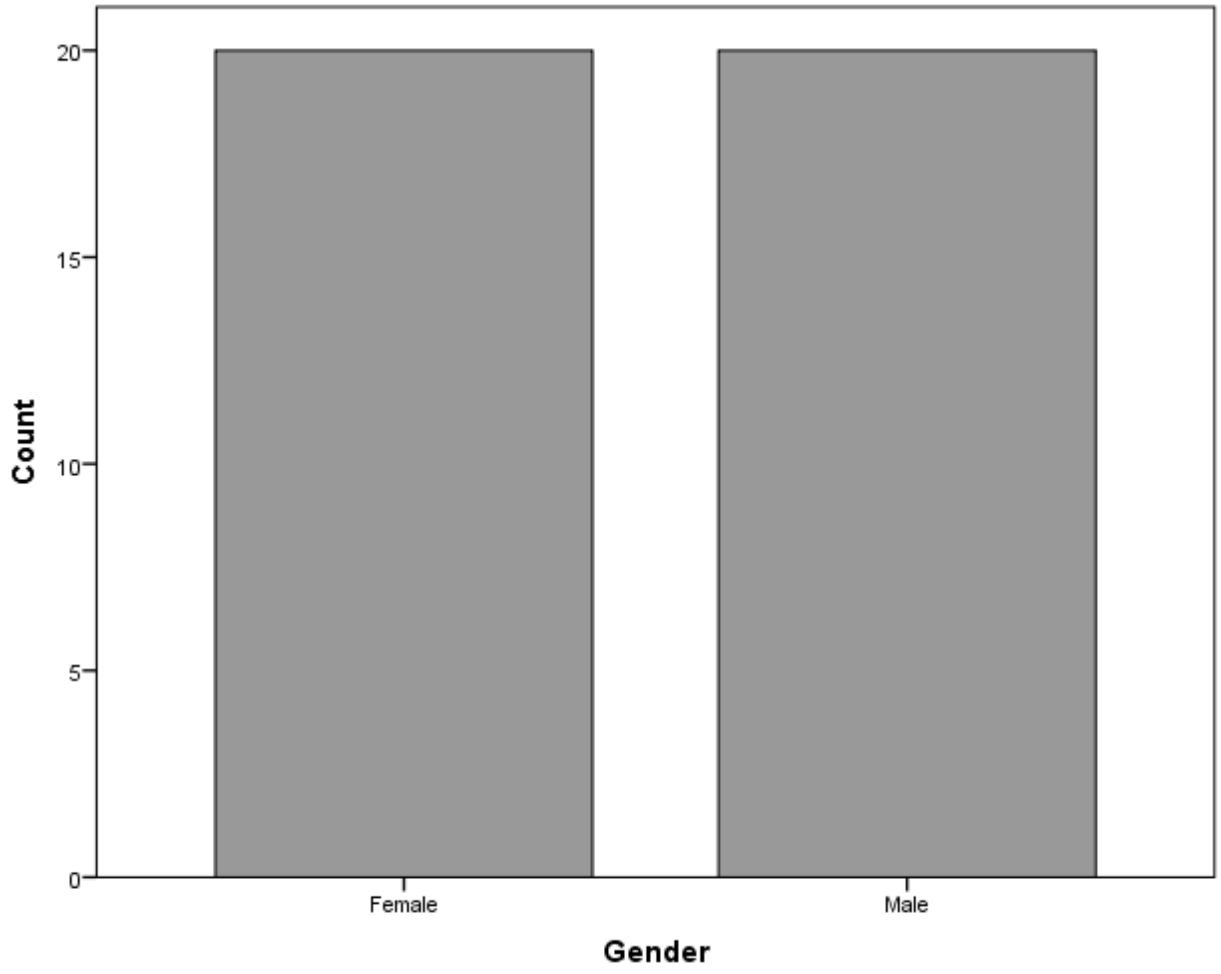

Figure 2. Gender count.

The following figure presents the histogram of age-related data. As shown, this was found to be close to normally distributed, with the mean age being slightly above 50.

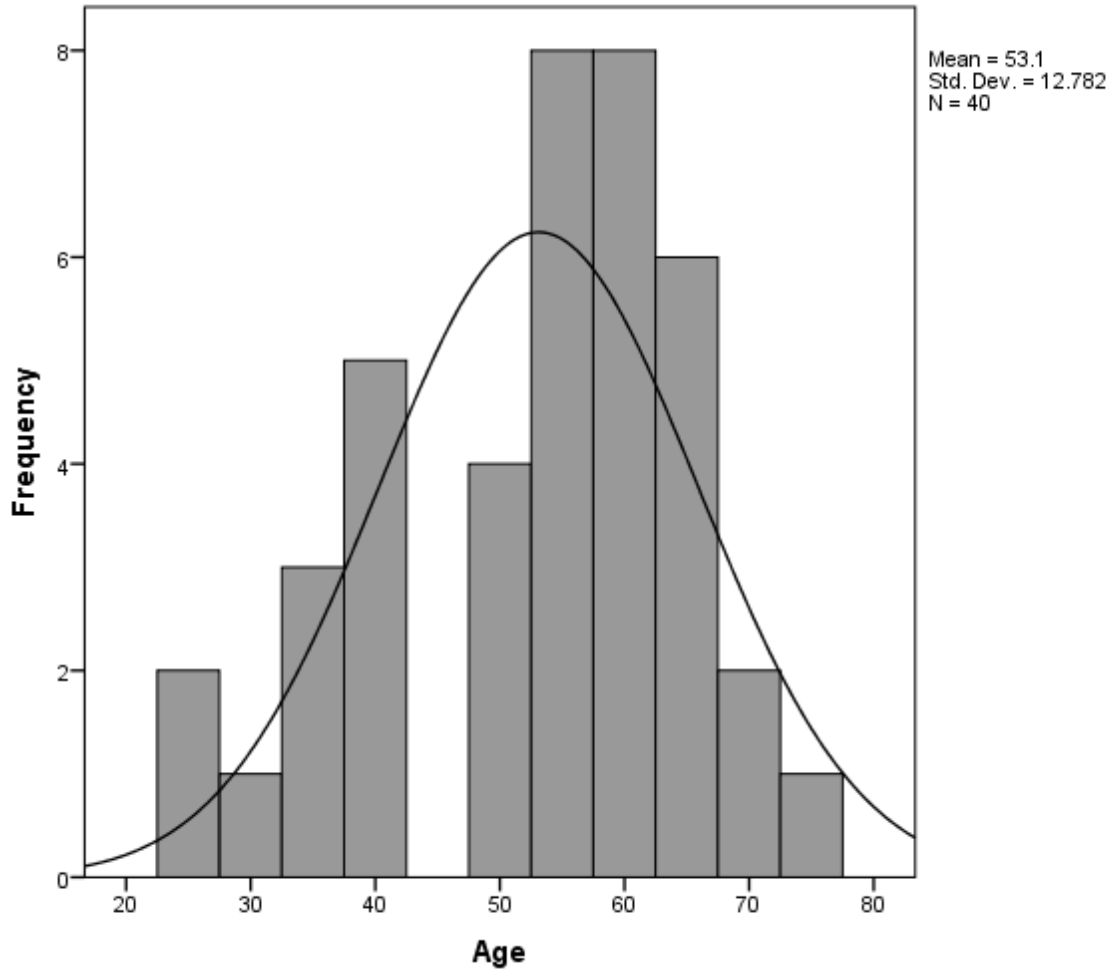

Figure 3. Age and frequency of pain levels.

With regard to the statistical tests conducted, a paired-samples *t* test was conducted first to determine whether there was a significant difference between before 2008 and before 2009 measurements. Before 2008 measurements were found to have a mean of 3.44 (*SD* = 3.38), and before 2009 was found to have a mean of 2.90 (*SD* = 3.45). The paired-samples correlation was found to be positive, strong, and statistically significant, $r(37) = .666$, $p < .001$. This paired-samples *t* test did not achieve statistical

significance, $t(38) = 1.205$, $p = .235$, indicating that the means for before 2008 and before 2009 were not significantly different.

Next, a repeated-measures general linear model was applied, with the mean of "before" pain scores and current pain scores included as the outcomes and with gender included as a factor and age as a covariate. Tables 1, 2, and 3 report the descriptive statistics associated with this model. As shown, mean pain levels were found to be higher among males as compared with females, with a much larger difference in mean pain scales by gender found among the "before" measurements as compared with the current pain levels. Additionally, mean pain level was found to increase substantially over time among females, while it decreased slightly over time among males.

Table 1

Repeated-Measures GLM: Descriptive Statistics

Measure	Gender	Mean	*SD*
Before mean	Female	1.75	2.79
	Male	4.43	2.89
	Total	**3.09**	**3.12**
Current pain level	Female	3.90	3.48
	Male	4.20	3.75
	Total	**4.05**	**3.57**

Table 2

Male Subjects in Study

				Pain level	
ID	Age	Identifier	2011–2014	Y2008	Y2009
1	53	P0001	9	6	6
2	57	M1002	0	6	6
3	67	W1003	0	8	0
4	67	C0004	4	0	
5	62	M0005	0	0	0
6	50	S0006	10	3	3
7	63	T0006	7	6	0
8	66	M0007	6	0	0
9	58	E0009	0	7	8
10	55	A0010	5	5	5
11	71	L0011	10	10	10
12	60	H0012	0	8	0
13	39	S0013	8	8	7
14	55	M0014	2	5	4
15	40	C0015	0	3	2
16	61	S0016	4	6	8
17	50	W0017	8	7	4
18	26	H0018	4	8	4
19	68	S0019	0	0	0
20	77	B0020	7	6	8

Table 3

Female Subjects in the Study

				Pain level	
ID	Age	Identifier	2011–2014	Y2008	Y2009
1	58	V0022	8	3	9
2	37	D0023	5	0	0
3	58	E0024	8	3	7
4	42	D0025	4	2	4
5	62	S0026	4	0	0
6	52	P0027	8	0	0
7	65	R0028	8	9	9
8	35	G0029	0	0	0
9	30	P0030	0	0	0
10	50	S0031	0	0	0
11	34	H0032	6	0	0
12	39	F0033	0	0	0
13	25	D0034	3	0	0
14	41	S0035	10	7	0
15	57	J0036	0	0	0
16	62	H0037	6	6	7
17	56	D0038	2	0	0
18	63	L0039	0	0	0
19	57	W0039	0	0	0
20	56	F0040	6	2	2

Next, Box's test of the equality of covariance matrices was not found to achieve statistical significance, Box's $M = 2.679$, $F(3, 259920) = .842$, $p = .471$. This result indicates that the null hypothesis stating that the observed covariance matrices of the dependent variables are equal across groups was not rejected, and therefore, that this assumption was not violated. With regard to Levene's test of the equality of error variances, this failed to achieve statistical significance both with regard to the before mean, $F(1, 38) = .337$, $p = .565$, and the current pain level, $F(1, 38) = .282$, $p = .598$. This result indicates the assumption was also not violated in this model.

Table 4 reports the results of the multivariate tests associated with this model. As shown, statistical significance was not indicated either with respect to the effect of time or with regard to the interaction between time and age. These results indicate no significant mean change over time, with age not found to significantly moderate changes over time. However, the significant interaction between time and gender indicates that changes over time significantly differ because of gender, a result that is also reflected in the descriptive statistics reported earlier.

Table 4

Repeated-Measures GLM: Multivariate Tests

Effect	Pillai's trace	*F*	Partial η^2	Power
Time	.012	.440	.012	.099
Time * age	.002	.074	.002	.058
Time * gender	.100	4.110*	.100	.506

Note. *df* = 1, 37.

Next, the results of the between-subjects' effects associated with this general linear model are presented in Table 5. As shown, statistical significance was not found with respect to the effects of either age or gender.

Table 5

Repeated-Measures GLM: Between-Subjects Effects

Source	Type III SS	Mean square	*F*	Partial η^2	Power
Intercept	16.911	19.911	1.066	.028	.172
Age	8.704	8.704	.549	.015	.111
Gender	28.220	28.220	1.779	.046	.255
Error	587.040	15.866			

Note. Intercept, age, gender: *df* = 1; error: *df* = 37.

The estimated marginal means associated with this model are reported in Table 6. As shown, the mean for males was substantially higher than the mean for females, with an overall increase in mean values found over time. Additionally, as reflected in the descriptive statistics earlier, a large increase in mean values were found over time for females, while this was found to decrease slightly with respect to males. The statistical tests comparing these means again failed to find significance with respect to respondent gender, $p = .190$, or time, $p = .077$.

Table 6

Repeated-Measures GLM: Estimated Marginal Means

Measure		Mean	*SE*	95% confidence interval	
				Lower	Upper
Grand mean		3.569	.445	2.666	4.471
Gender					
Female		2.940	.649	1.626	4.254
Male		4.198	.649	2.883	5.512
Time					
1		3.088	.451	2.175	4.000
2		4.050	.578	2.879	5.221
*Gender * time*					
Female	1	1.890	.656	.560	3.220
	2	3.990	.842	2.284	5.695
Male	1	4.285	.656	2.955	5.615

The following figure presents a visual illustration of the estimated marginal means associated with pain levels. As reflected in the descriptive statistics discussed earlier, mean pain levels were initially found to be much higher for males as compared with females, while these levels were found to increase sharply for females over time, as well as to decrease slightly among males. Current measurements were found to be very similar between males and females.

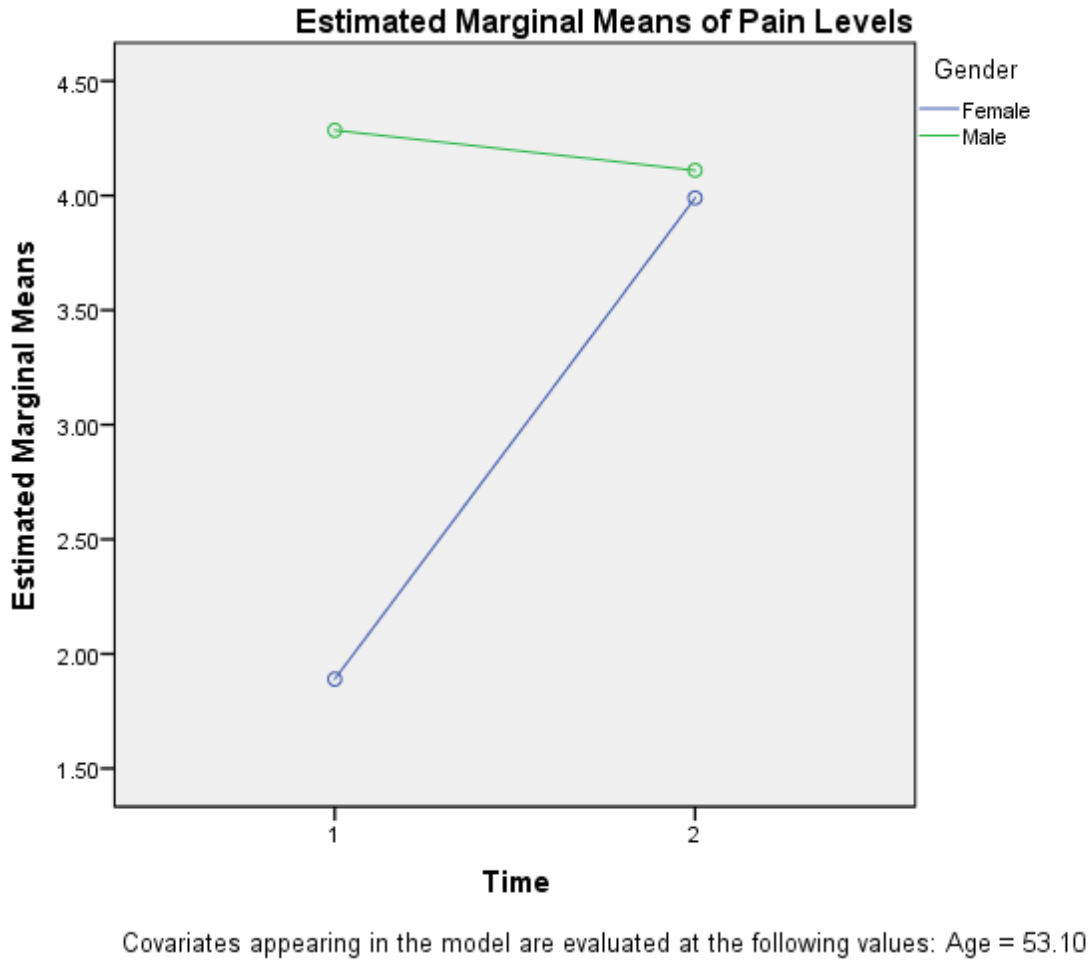

Figure 4. Estimated marginal means of pain levels.

Recommendations

The data provided suggest an area of concern regarding the PACT model concept in improving pain scores. The analysis did not achieve the results anticipated because the study did not provide statistically significant data to determine whether the PACT model or other contributing factors impacted the pain scores. Therefore, I recommend the team utilize an organizational performance tool to evaluate how we can improve the results. Lean Six Sigma is the performance improvement model to be implemented to (a) define the problem and what will bring improvement, (b) measure the process of improvement, (c) analyze the root cause for poor performance, (d) improve the process by identifying the root cause, and (e) control the improved process to hold any gains (Pronovost & Lilford, 2011). Areas to consider include member roles, responsibilities of the members, and addressing the root cause of why the findings in the project suggest females report higher pain scores than males. Women are the fastest growing segment of the veteran population, and treating female veterans for chronic pain is complicated by a high incidence of psychosocial conditions such as military sexual trauma (MST). Uncontrolled chronic pain results in poor mental health and a diminished quality of life. Further, it may lead to the abuse of prescription opioids, while the VHA has adopted a national priority of decreasing the use and abuse of narcotic medications.

The VHA reports that as many as 1 in 4 women experience military sexual trauma, as defined by federal law (Title 38 United States Code 1720D). This law states that MST is psychological trauma that, in the judgment of a VA mental health

professional, resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment that occurred while the veteran was serving on active duty, on active duty for training, or during inactive duty training (Cichowski et al., 2017).

Cichowski et al. (2017) reported that the current definition of MST centers on the psychological trauma, a term that encompasses many comorbid conditions, including major depressive disorder, post-traumatic stress disorder, generalized anxiety disorder, suicide attempts, and decreased quality of life. Cichowski et al. also reviewed 516,950 electronic medical records in a retrospective study to record instances where the medical provider had noted a diagnosis of chronic pain, the type of pain, and the notation for MST in records of female veterans. However, because their results were taken from an electronic chart review and not through direct feedback from the female veterans, I suggest developing ways to obtain data directly from the women. This would be designed in such a way as to have the veteran put in her own words how she relates the pain experience, how MST impacts the pain and her coping skills, and how she feels the VHA can best assist her in living with the chronic pain while also coping with other psychosocial factors related to military service in order to adjust and live a fulfilling civilian life. I would consider requesting IRB approval to conduct a qualitative study to interview the female veterans identified as having increased reports of pain with the aim of discussing other potential contributing factors such as ethnicity, MST, and service in a combat zone.

Table 7

Lean Six Sigma DMAIC Methodology Improvement Tool

Align Process Design with Performance

Lean Six Sigma DMAIC methodology	
• Define a problem or improvement opportunity • Measure process improvement	
Analyze – determine the root cause of poor performance **Improve** – the process by identifying the root causes **Control** – the improved process to hold gains	
Performance standards	
Identify the stakeholders: veteran PACT member and Veterans Health Administration	
Performance management	
Compare current process design: initial PACT model/current PACT model with group medical appointments Review role and responsibilities of the team members to identify opportunity areas	
Reporting progress	
• Tracking and report process	• Staff satisfaction
• Staff turnover	• Press Ganey scores
• Primary care providers satisfaction	

Assumptions and Limitations

Assumptions

Grove, Burns, and Gray (2012) defined assumptions as statements that are taken for granted or considered true even though they have not been scientifically tested. I assumed that veterans who were treated for chronic back pain with a sole primary care provider would report an increase in pain levels and a decrease in patient satisfaction, while veterans enrolled in the team approach with multiple disciplines assigned to the team would report decreased pain levels and improved patient satisfaction. I also assumed veterans assigned to the PACT initiative would meet the VHA directive for pain-management practice guidelines. The VHA pain-management practice guidelines assume the following:

- The patient is assessed at each visit to determine that the best treatment options are discussed with the veteran;
- The plan optimizes the patients' health outcomes and functions to improve their quality of life;
- Preventable complications and morbidity are minimized; and
- The use of patient-centered, self-management care skills are emphasized (VHA, 2014).

Limitations

Grove et al. (2012) stated that limitations are restrictions that may limit the generalizability or credibility of the findings of a study. Limitations to this study's

findings may include the ability to determine which treatments or modalities improved the patient's pain levels and how they can be linked to a specific satisfaction score. For example, if the patient submitted a patient satisfaction score for the overall visit with the team, how will team members know whether the rating was for pain assessment and treatment or for other aspects of the visit? Another limitation is the ability to determine which primary care provider's team methods or treatment plans offer the best options for veterans with chronic back pain while still considering effectiveness and safety.

Summary

Overall, the results of these analyses failed to indicate statistical significance with respect to changes over time or with regard to respondent age or gender. However, a significant interaction was found between time and respondent gender, with these results indicating a large increase in pain scores over time with respect to females, and with a slight decrease found over time among males. While there was a very large gap in pain scores prior to 2008 and 2009, with females having much lower scores, current mean scores were found to be very similar, with the mean score among males found to be only slightly higher than females.

Section 5: Dissemination Plan

The plan to present the information requires a PowerPoint presentation (Table 8) at a monthly primary care staff meeting. Preparation for sharing the results required feedback from the directors' quality performance team and primary care leadership prior to presenting to the primary care providers. After reviewing the data, it was determined that the project would provide beneficial ways to improve veterans' pain scores and quality of life as well as team members' efficiency and effectiveness. As a result, one member of each team was engaged to approach the project with an identified performance improvement tool. The tool selected was Lean Six Sigma (Table 7). Also prior to presenting the project, an analysis of self-provided feedback on how I can improve my presentation style and participation with the team was completed. Results are shown in Table 9.

Table 8

Dissemination Plan for Primary Care

Presentation program evaluation for veterans with chronic pain in primary care

- Introduction
- Purpose of the project
- Sources of evidence
- Recommendations
- Problem statement
- Background
- Findings
- Systemic critical thinking in designing improvements

Continuous improvement cycle: PDSA

- **Plan**: Identify the opportunity for change
- **Do**: Implement the change on small scale
- **Check or study the data**: Use data to analyze the results – identify a difference
- **Act**: If change was successful, implement on larger scale

Analysis of Self

The Dominance, Influence, Steadiness, and Conscientious (DISC) model was used to provide an objective analysis for assessing my strengths and opportunity areas and analyzing my profile pattern. The profile suggests I am high in Dominance and Conscientiousness.

The Dominance profile suggests the following: demanding, forceful, risk-taker, adventuresome, decisive, inquisitive, and self-assured. Conscientious reports the

following: diplomatic, systematic, conventional, courteous, careful, restrained, having high standards (Table 9).

High Dominance characteristics include (a) seeking opportunities for advancement, (b) seeking positions of power and authority, (c) seeking to be in control, with the freedom to make quick decisions, and (d) recognized for subskills and accomplishments and making decisions analytically.

High Conscientious characteristics include (a) analytic thinking, (b) seeking to understand the parameters of a problem before making decisions, and (c) expecting superior results.

In terms of implementing the results of the project and working with the team, areas of strength identified include the ability to (a) motivate and seek unique accomplishments and innovative solutions, (b) deploy great sensitivity but not hesitate to display assertiveness to get the task completed, (c) take control of the environment, (d) find change exhilarating rather than threatening, and (e) refrain from expressing emotions to keep the work environment professional.

The ways in which I should seek results and motivate the team to want to work with me as a team member include (a) practicing tactful communication and pursuing activities that take an advanced ability to plan and prioritize, (b) combating a fear of lack of influence by accepting the team limits and finding tasks that are more likely to reach satisfying conclusions, (c) welcoming a productive team while noting my strong desire

for perfection, and (d) realizing that my ambitions are probably not in competition with my colleague's goals.

Table 9

DISC Personality Profile – Self-Analysis

High dominance			
Demanding	Forceful	Risk-taker	Adventuresome
Decisive	Inquisitive		Self-assured

High conscientiousness			
Systemic	Cautious		Restrained
Diplomatic	Conventional	Careful	High standards

Summary

The VA has supported projects to improve patient outcomes for veterans, who are challenging to treat, with unique health care issues related to their military service environment. Health care providers are encouraged to find ways to improve veterans' outcomes while providing safe, effective, and compassionate care. This project evaluated the current pain program to seek knowledge regarding the effectiveness of assisting veterans in managing their pain, improving their quality of life, and contributing to their communities. The collection and analysis of the data offered an opportunity to explore the comparison of pain scores for veterans prior to implementation and after the PACT

initiative to explore the results and analyze the relationships of chronic back pain to the contributing factors.

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