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Supporting Self-Care in Veterans with Chronic Pain: Nurse Practitioner-led Telephone Follow-Up

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Keywords: chronic pain, veterans, self-care, nurse practitioner
Structured Summary

Background
Veterans are disproportionately affected by chronic pain. Conventional pain management lacks emphasis on self-care and relies heavily on prescription opioids. Primary care providers (PCP) are able to educate veterans on self-care management; however, frequent follow-up is needed to improve overall pain and quality of life.

Objective
To implement a Nurse Practitioner (NP) telephone follow-up guided by the 5A’s framework among veterans with chronic pain in a primary care setting. This pilot evidence-based project (EBP) aimed to improve follow-up of self-care management in order to decrease pain, increase quality of life, and decrease pain medication use.

Materials & Methods
The pilot EBP took place at a single Veterans Affairs (VA) Primary Care clinic. The Institutional Review Board (IRB) at the VA and the University of San Diego approved this pilot study. Baseline data were retrieved among 14 veterans with chronic (>3 months) musculoskeletal pain. A monthly telephone follow-up using the 5A’s framework (ask, assess, advise, assist, arrange) was made which reinforced self-care, developed patient-centered goals, and established a follow-up plan. Outcome data were collected monthly including pain scores (Numeric Pain Rating Scale), quality of life scores (American Chronic Pain Association Scale), and number of pain medications. After 3 months, pre/post intervention data were compared and analyzed to evaluate project effectiveness.
Results

13 out of 14 veterans (93%) completed all 3 monthly telephone interventions. Average pain scores (NPRS) improved from 5.94 to 4.46, decreasing 1.44 from baseline (95% confidence interval, .605, 2.27) and was statistically significant at p < .003. Average quality of life (QOL) scores improved from 4.7 to 6.85, increasing 2.08 from baseline (95% confidence interval, 1.0, 3.15) and was statistically significant at p < .001. Average pain medications (PM) decreased from 2.21 to 2.14 and was not clinically or statistically significant at a p=.790.

Conclusions

A monthly telephone intervention emphasizing overall self-care management improved average pain and quality of life outcomes among chronic pain veterans. Telephone follow-up may serve as a substitute for routine chronic pain follow-up visits or as a supplement to improve access to quality care. Future research is warranted.
Introduction

Veterans are at high risk for developing chronic pain as result of combat experiences and training. It is one of the top reported symptoms upon returning from war and is further complicated by coexisting health conditions such as posttraumatic stress disorder, anxiety, and post-concussive symptoms. Delgado et al. (2014) reported that among 50,000 military members wounded in action, 80% develop chronic pain after returning from war. Toblin et al. (2014) also found that 44% of U.S. soldiers reported chronic pain after returning home from deployment, with many relying heavily on opioids for pain management. As a result, uncontrolled pain remains a significant issue in this population resulting in chronic opioid dependence, adverse health outcomes, increased utilization of health services, and increased disability.

Primary care providers are at the forefront for managing and treating veterans with chronic pain. The U.S. Department of Veteran Affairs and the U.S. Department of Defense [VA/DoD] states more than 50% of male veterans’ report pain in primary care settings alone. It is estimated that over 1 million veterans in the U.S. use opioid medications to treat pain with nearly half of them using opioids chronically. While conventional pain management strongly depends on pharmacological therapy, evidence supports the use of collaborative care models to improve pain management and patient outcomes. Primary care providers are therefore responsible for implementing multimodal and integrative approaches to address the complex needs of chronic pain veterans to prevent further comorbidities and sequelae.

Background/Clinical Problem

This study evaluated the results of a quality improvement project initiated at a single Veterans Affairs (VA) Primary Care clinic. The population of interest included veterans who reported chronic (>3 months) musculoskeletal, non-cancer pain. The initial intervention
implemented use of a self-care model to promote self-management and address alternative treatment modalities (Figure 1). This “self-care” model was guided by the American Family Physician Journal’s (AFP) key recommendation in supporting self-management of chronic illness.\(^8\) Outcomes included pain scores (Numeric Pain Rating Scale [NPRS]), quality of life scores (American Chronic Pain Association’s Quality of Life Scale [QOL])\(^9\), and number of pain medications (PM) used. Pain medications included non-steroidal anti-inflammatory medications (NSAID), anticonvulsants, selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, topical pain medication, and opioid analgesics. A benchmark score of 5 was set for NPRS and QOL scores, respectively.

A review of the 6-month data among a pilot of 14 patients revealed that the average NPRS was 5.94; average QOL score was 4.7; and average PM use was 2.21. Despite this evidence-based approach, QOL scores did not meet benchmark target score of 5. It was also found that 50% of these veterans did not have a documented follow-up plan. Follow-up is an important part of chronic pain management in order to monitor treatment effectiveness and non-pharmacological therapy compliance.\(^10\) This prompted a need to improve overall follow-up to effectively manage chronic pain and continue to improve quality outcomes.

**Purpose of Evidence-Based Project**

The overall purpose of the study was to pilot an evidence-based quality improvement project examining the use of a Nurse Practitioner (NP) led telephone follow-up guided by the 5A’s framework in a primary care setting. The study aimed to improve overall follow-up of self-care management among chronic pain veterans, with a goal of decreasing pain, increasing quality of life, and decreasing pain medication use. The study was guided by the Iowa Model of
Research-Based Practice to Promote Quality Care\cite{11}, illustrating ongoing efforts to improve chronic pain management among the veteran population which is considered a high organizational priority for the VA/DoD.

**Evidence-Based Interventions**

Multiple evidence-based interventions were used in order to improve overall follow-up of self-management among chronic pain veterans: 1) Telephone follow-up by Nurse Practitioner; 2) 5A’s framework to develop patient-centered care plan; 3) Assessment of pain, quality of life, and number of pain medications used; 4) Reinforce self-care model for chronic pain. Multiple search engines were used for the literature search to support the project, including: PubMed, CINAHL, Ovid, PsycINFO, Cochrane Database of Systematic Reviews, and National Guideline Clearinghouse. The search was limited to clinical practice guidelines, systematic reviews, meta-analysis, randomized controlled trials, and qualitative trials within the last 10 years. The key words utilized for the search included: “self-care”, “self-management”, “pain”, “chronic pain”, “chronic musculoskeletal pain”, “musculoskeletal pain”, “quality of life”, “veterans”, “military” “musculoskeletal”, “motivational interviewing”, “telephone” and “telephone follow-up”. Search of the literature yielded a total of approximately 104 articles. Among these results, 40 articles were reviewed and 17 were used to support the intervention. This review summarizes 14 out of the 17 articles.

*Telephone Follow-up by Nurse Practitioner*

The study adapted telephone use as a modality for continued follow-up for chronic pain management. This is supported by a number of studies which examined the use of technology to aid in follow-up of chronic conditions to improve outcomes. A primary care telecare
collaborative management intervention by Kroneke et al. (2014) resulted in improved musculoskeletal pain.\textsuperscript{7} Bair et al (2015) illustrated that a telephone-based intervention which addressed pain medications, cognitive behavioral therapy, and self-care strategies resulted in decreased pain severity and disability.\textsuperscript{12} Furthermore, Heapy et al. (2015) concluded that technology-assisted interventions, such as telephone use, can improve overall chronic pain self-management in the adult population.\textsuperscript{13}

\textit{5A’s Framework to Develop Patient Centered Goals}

The 5A’s framework has been widely used for chronic illness behavioral counseling.\textsuperscript{14,15} The telephone follow-up adapted the 5A’s framework, prompting the provider to “Ask, Assess, Advise, Assist, and Arrange”; and ultimately create an action plan with the patient.\textsuperscript{14} This supports AFP’s recommendation to develop a treatment plan to address physical, social, functional, and psychological needs of a patient.\textsuperscript{10} Furthermore, the Institute for Clinical Systems Improvement (ICSI) also recommends a comprehensive treatment approach by developing a care plan addressing a biopsychosocial approach.\textsuperscript{16} The American Society of Anesthesiologists (ASA) also recommends periodic evaluation and long-term follow-up.\textsuperscript{17} The final A, “arrange”, establishes a follow-up plan which is a necessary component of monitoring treatment effectiveness and compliance.

\textit{Assessment of Pain, Quality of Life, and Number of Pain Medications}

The study outcomes included pain scores (NPRS), quality of life scores (QOL), and number of pain medications (PM). This was adapted from the VA/DoD’s recommendation: “pain intensity should be measured using a numeric rating scale (0-10) and evaluated at each visit (Grade B). Function related to pain should also be measured (Grade A)”.\textsuperscript{4} Pain intensity scores were assessed using the Numeric Pain Rating Scale (NPRS); quality of life scores was assessed
using the American Chronic Pain Association Quality of Life (QOL) Scale.\textsuperscript{9,18} Both the NPRS and the QOL scale have been approved by the VA and are part of the 2014 Veterans Affairs Pain Management and Opioid Safety Educational Guide.\textsuperscript{18}

\textit{Reinforce Self-Care Model for Chronic Pain}

The study continued to reinforce the self-care model, encouraging veterans to utilize multimodal approaches for chronic pain management (Figure 1).\textsuperscript{2,14} One of the key recommendations from ASA is to use multimodal interventions to treat chronic pain.\textsuperscript{17} A systematic review also illustrated that biopsychosocial interventions decreased overall pain and increased function in patients with chronic low back pain.\textsuperscript{19} Du et al. (2011) also found that a self-management model has small to moderate benefit for pain and disability for chronic musculoskeletal pain conditions.\textsuperscript{20} Active self-management initiatives are beneficial as they allow patient-centered treatment, promote self-management, and are relatively safe and cost-effective.\textsuperscript{2} This is in line with Centers for Disease Control and Prevention (CDC) 2016 Opioid Guidelines for chronic pain, which not only recommends nonpharmacological approaches as first line of therapy, but also states PCPs can facilitate patients to take an active role in their care plan.\textsuperscript{21}

\textbf{Methods}

\textit{Study Design}

The study was a pilot evidence-based quality improvement project which ensured all patients received the intervention to improve quality of care. Program effectiveness was determined by comparing average data outcomes pre-intervention to post-intervention over a 3-month timeframe.
IRB Approval

The initial quality improvement project “Supporting Self-Care in Veterans with Chronic Pain” was approved by VA Institutional Review Board (IRB) on September 2015 for a one year study. The VA IRB-approved study was modified in May 2016, requesting to add a Nurse Practitioner-led telephone follow-up in order to improve current outcomes and follow-up. The protocol amendment received approval from the VA IRB and University of San Diego’s IRB in May 2016. Veterans who participated in this pilot study provided written consent to the original protocol and were informed of the sub-study by their PCP.

Participant Demographics

Baseline data were retrieved from 14 medical records of veterans with chronic musculoskeletal pain (< 3 months) from September 2015 – June 2016. Outcomes included NPRS, QOL, PM, and number of follow-up visits. Veterans ranged from 28 to 71 years old with an average age of 46.3. There were 13 males and 1 female who participated in the study. Chronic pain diagnosis included: low back pain (LBP), LBP with radiculopathy, fibromyalgia, cervical radiculopathy, hip pain, shoulder pain, wrist pain, neck pain, knee pain, and osteoarthritis. Out of 14 veterans, 8 had comorbid psychiatric diagnosis including depression and post-traumatic stress disorder (PTSD). A total of 12 veterans were service connected for a musculoskeletal condition, in which 11 were ≥ 50% service connected and 4 were 100% service connected.

Project Implementation

Veterans participating in the study were arranged in chronological order of last office visit and prioritized those who were not seen recently in office. Phone calls were made in
biweekly intervals using the 5A’s framework to guide the conversation (Figure 2). The conversation began with “Ask”, which allowed the veteran to give permission to talk about their pain and quality of life. “Assess” included NPRS, QOL, and PM used. Any barriers limiting their progression to optimal recovery was also assessed. “Advise” included referring to components of the self-care model and determining potential interventions, including reviewing pain medication regimen, increasing physical activity as tolerated, referrals to Physical Therapy, Acupuncture, Chiropractor, Pain Management, etc. “Agree” included collaboratively developing achievable goals based on patient’s selected interventions. “Assist/Arrange” included providing information to assist patient implement interventions, including appropriate referrals to VA resources. It also specified a plan for follow-up and set a time for monthly phone calls. The development of a patient-centered action plan was kept in the patient’s chart. (Figure 3). Telephone follow-ups following the 5A’s framework were conducted monthly for a total of 3 months. NPR, QOL, and PM outcomes were obtained monthly and recorded in the excel spreadsheet.

Results

Results of the pilot project revealed that a monthly NP-led telephone follow-up guided by the 5A’s framework decreased average pain scores and increased average quality of life scores among chronic pain veterans (n=14) over a 3-month timeframe (Table 1). Average NPRS improved from 5.94 to 4.46, decreasing 1.44 points from baseline (95% confidence interval, .605, 2.27). This was statistically significant at p < .003. Average QOL scores improved from 4.7 to 6.85, increasing 2.08 points from baseline (95% confidence interval, 1.0, 3.15). This was also statistically significant at p < .001. Average PM decreased from 2.21 to 2.14 and was not
clinically or statistically significant at a \( p = .790 \). 13 out of 14 veterans (93%) completed all 3 telephone interventions, which improved overall follow-up plan from 50% at baseline (Table 2).

Evaluation of the self-care modalities utilized by the veterans (Figure 6) illustrated:

*Medication*: 14 out of 14 (100%) of veterans were using a pharmacological modality to help with chronic pain, including NSAID, APAP, topical, SSRI, and anti-convulsants. 4 out of 14 veterans (28.5%) used opioids daily for chronic pain.

*Physical*: 12 out of 14 (85.7%) veterans engaged in a physical modality to treat chronic pain including daily exercise, Physical Therapy, or participants of VA MOVE! Weight Management Program.

*Procedural*: 4 out of 14 (28.5%) veterans were referred to additional resources to manage pain including Acupuncture, Chiropractor, Pain Pharmacist, Neurology, and Musculoskeletal clinic for further treatment.

*Psycho-behavioral*: 8 out of 14 (57.1%) veterans had an underlying psychiatric comorbidity, including depression and post-traumatic stress disorder (PTSD). Of these, 7 out of 8 (87.5%) were being treated for psychobehavioral modalities, including SSRI, mental health consult, and PTSD clinic.

**Discussion**

Chronic musculoskeletal pain among the veteran population continues to persist at alarming rates in the U.S. The goal of chronic pain management is to improve overall pain and function. Using a self-care model and monthly telephone follow-up by a Nurse Practitioner, this evidence-based project resulted in a decrease of average NPRS by 1.44 points, increase in QOL
scores by 2.08 points, and improved overall follow-up to 93% a pilot project of chronic pain veterans over a three-month period.

The goal of this study was to encourage veterans to take an active role in managing their chronic pain while providing resources for various multimodal treatments that can improve overall pain and quality of life. The data illustrates a steady decrease in average pain scores and increase of quality of life scores as the intervention was implemented. This steady improvement may be attributed to the emphasis of multimodal therapies and increased awareness of utilization of these therapies to help with pain, such as daily exercise and core strengthening, Physical Therapy, Acupuncture, Chiropractor, and referrals to treat other debilitating psychiatric comorbidities. While there was no overall change in the average pain medication use, we consider pain medication as part of the multimodal therapies that can help alleviate pain therefore reinforcing that treating chronic pain effectively requires a multimodal approach.

Much research has focused on alternative modalities to improve quality care for costly chronic conditions in primary care settings, such as heart failure and hypertension. Standard primary care office visits allow approximately a 20-minute visit window to address chronic conditions which may be insufficient to address all patient’s needs. This project illustrated that telephone follow-up, also known as “telecare” or “telephone encounters”, may serve as a substitute for routine chronic pain follow-up visits or as a supplement to improve quality of care. Telephone follow-up and encounters at the VA are billable and therefore may increase overall reimbursement for PCPs. This depends on multiple factors, including veterans’ age, service connection, and rank. Because many chronic veterans are evaluated for service-connected conditions and comorbidities which require frequent follow-up, this type of intervention may be ideal in order to improve access to care and reduce wait-times for in-office visits.
Furthermore, the 5A’s is an evidence-based framework that has been largely used for counseling on obesity and smoking cessation management. The study shows the 5A’s may be adapted to promote self-care of chronic pain in a primary care setting as well. Because chronic pain is subjective and differs from person to person, the 5A’s framework allowed for the development of personalized action plans in order to assist veterans on goal setting within their own functional limits. As veterans understand their key role in managing their chronic condition, NP’s can continue to coordinate all aspects of treatment plan to assist veterans in reaching patient-centered goals. This patient-centered approach helps each veteran remain accountable in meeting reasonable goals within a specified timeframe.

Limitations

There were several limitations to this study. First, the project looked at average pain, quality of life, and number of pain medications over a 3-month timeframe. A future improvement may look to increase length of time (i.e. one year) of the project and look at changes in individual data outcomes rather than average data points within the population. Secondly, the project was implemented in a bi-weekly basis due to limited availability and variance in the daily schedules of veterans as well as the NP who initiated the phone calls. As a result, the intervention was not implemented to all veterans from the initial quality improvement project due to time constraints. A future improvement may assess feasibility of incorporating the intervention within a provider’s daily schedule as VA providers are eligible for a reduced schedule for telephone encounters. An alternative may be to incorporate other methods of communication (i.e. patient portal, text messaging, email) to facilitate communication and follow-up. Establishing scheduled appointments throughout the day may also improve communication and outreach. A preferred method of communication among the veteran
population should be assessed. Another limitation is that the population consisted of male veterans and further research is needed to assess if the intervention is equally feasible among the female veteran population. Finally, this was a non-blinded, single-center study and further implementation at another primary care setting within the VA will help determine feasibility and sustainability of the project.

**Conclusion**

A pilot evidence-based project revealed a monthly Nurse Practitioner-led telephone intervention may improve outcomes among chronic pain veterans. The 5A’s is an evidence-based framework that may be adapted to promote self-care of chronic pain and establish goals for follow-up in a primary care setting. The use of telephone intervention may potentially serve as a substitute for routine chronic pain follow-up visits or as a supplement to improve quality of care and access for veterans. Chronic pain requires ongoing evaluation, education, and help setting reasonable expectations for course of treatment. These results aim to provide further insight and new knowledge on ways to continuously improve pain management among the veteran population, allowing them to return to their baseline quality of life as closely as possible.
References


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Title: Self-Care Model

**Psycho-Behavioral**
- Cognitive behavioral
- Meditation
- Tx mood and trauma issues
- Address substance abuse

**Medication**
- Acetaminophen
- NSAID's
- Anticonvulsants
- Antidepressants
- Topical Analgesics
- Opioids

**Procedural**
- Nerve blocks
- Steroid injections
- Trigger point injections
- Stimulators
- Pumps

**Physical**
- Exercise
- Physical therapy
- Occupational therapy
- Orthotics
- Alternative therapies

**Reduce pain**

**Restore function**

**Cultivate well-being**

**Improve quality of life**
**5A’s of Chronic Pain Management**

| Ask            | - Ask for permission to discuss chronic pain  
<table>
<thead>
<tr>
<th></th>
<th>- Explore motivation for self-care management</th>
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| Assess         | - Assess pain score, quality of life, and number of pain meds  
|                | - Explore barriers and complications to pain management |
| Advise         | - Advise the patient about health risks of chronic pain and benefits of self-care modalities, treatment options, long-term strategies |
| Agree          | - Collaboratively agree on treatment goals, behavioral changes, and specific details of treatment plan |
| Arrange/Assist | - Assist in identifying and addressing barriers; provide resources; assist in finding and consulting with appropriate referrals; arrange follow-up plan |

Title: 5A’s Framework for Chronic Pain Management
Figure 3

Personal Action Plan for Chronic Pain Self-Management

1. **Goals:** Something you WANT to do:

2. **Describe:**
   a. How
   b. Where
   c. What
   d. Frequency
   e. When

3. **Barriers:**

4. **Plans to overcome barriers:**

5. **Conviction & Confidence Ratings _____ & ______ (0-10)

6. **Follow-Up:**

Current Pain Score: ________ Goal Pain Score: ________
Quality of life Score: ________
Pain Medications: ________

Title: Personal Action Care Plan
Figure 4

Title: Comparison of average pain score, quality of life score, and number of pain medications.
Figure 5

Title: Follow-up Completion Pre/Post Implementation
Figure 6

Title: Various self-care modalities (pharmacological, physical, procedural, psychobehavioral) used by 14 veterans