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Enhancing Chronic Pain Management Motivational Interview Among Lower Back Pain Patients

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Abstract

**Purpose:** Untreated chronic pain is a nationwide epidemic affecting individuals physically, psychologically, and financially. Low back pain is the most common subset of chronic pain. Restricted clinic time and a focus on procedural/prescriptive methods for managing pain prohibits patient education regarding self-care, and formation of a relationship with the provider.

**Design:** Article review yielded 20 articles that supported the use of motivational interviewing for chronic pain in lower back pain patients. They were evaluated for their strength of evidence on a scale of 1-6. One article was ranked level I as a meta-analysis, and six were ranked as level II which is randomized control trials.

**Methods:** Implementation of monthly telephone follow-ups, guided by the 5A’s framework to strengthen self-motivated behavior modifications, develop patient-centered outcomes, and outline systematic follow-up care plans. Data collection utilized standardized rating scales and questionnaires. The process proceeded for six months concluding with program evaluation.

**Results:** The average pain score improved from 4.6 down to 3.8 (-0.8) almost a 1-point decrease. The average QOL score had the most dramatic increase from 4.6 to 6 (+1.4). No improvement in pain medication usage.

**Conclusion:** Timely utilization of evidence-based interventions for chronic back pain can improve patient-provider interaction and promote self-care by addressing quality of life issues, decreasing patient pain scores and limiting the importance of opioid medications.

**Clinical Implications:** Promotion of self-care behaviors encourages provider backed safety and holistic collaboration.

**Keywords:** Pain, Motivational Interview, Lower Back, Nurse Practitioner

**Key Practice Points:** The purpose of this quality improvement article is to address the gap in lack of structured follow-up in chronic pain patients. It assesses the effects of monthly telephone follow-up calls utilizing motivational interview techniques to improve pain, quality of life scores and decrease patient utilization of opioid medications. The project showed that a nurse driven follow-up resulted in lower pain scores and improved quality of life.
Background

The aim of this paper is to support the use of monthly telephone follow-up calls to chronic lower back pain (LBP) patients to improve patient perceived quality of life and decrease patient reported pain and opioid consumption. One of the most common, and costly health conditions affecting United States (US) citizens is LBP. More U.S. adults are affected by common chronic pain conditions than by heart disease, diabetes, and cancer combined (Institute of Medicine, 2011). This condition affects approximately 80% of people at some point in their lives, and symptom relief is needed to reduce the burden of physical, psychological, and financial costs associated with LBP (National Institute of Neurological Disorders and Stroke (NIH), 2014). Physically, patients may be unable to work leading to disability and unemployment. In 2017 the California Department of Public Health (CDPH) found that 28 out of every 100,000 California citizens had a work-related skeletal (back) injury and required hospitalization costing upwards of $10 billion dollars for workman’s compensation (CDPH, 2017). Nationally, the direct cost of treating LBP in 2014 ranged from $39 to $78 billion, which is a conservative number considering the potential for unaccounted costs (Spine Research Institute (SRI), 2014). Direct costs included traditional treatments such as medication, surgery, and workman’s compensation. Indirect costs were estimated to total $62 billion and considered factors such as lost productivity days and inability to fill jobs vacancies (SRI, 2014). Psychologically, chronic pain is linked to anxiety and depression placing patients at risk for opioid dependency (Goseling, Lin, & Clauw, 2018).
High chances of relapsed pain within three months of initial pain consultation can frustrate healthcare providers resulting in passive methods of pain control like opioid medication (Vong et al., 2011). This places patients at an increased risk of becoming “dependent” on opioid medication and ignores alternatives such as self-promoting techniques to manage the pain (Vong et al., 2011). Daily over 130 people in the United States die from opioid related overdoses, and upwards of $78.5 billion is spent annually on health and social costs related to opioid abuse (National Institute on Drug Abuse, 2019). In California there were over 2,000 overdose deaths reported in half a years’ time and in that same year $4.26 million was spent on healthcare costs related to opioid abuse (California Healthcare Foundation, 2016). Chronic conditions such as LBP contribute to the opioid epidemic due to the debilitating nature of the disease. The over utilization of opioids has become an epidemic in our country creating a new Health People 2020 and 2030 goal to reduce the nonmedical use of opioids (2018). Opioid medications are frequently inappropriately prescribed for treatment of LBP. According to certain insurance reports, over half of individuals who are regular users of opioid medications report LBP (Deyo, Von Korff, & Duhrkoop, 2015). This mismanagement of finances and care for LBP patients contributes to the overwhelming total cost of managing chronic pain.

The doctoral project was implemented at the University of California at San Diego Center for Pain Medicine which serves as both a treatment facility for complex chronic pain conditions and provides consultation to primary care providers for treatment plans. Of the patient population, 40% of patients are treated for LBP. The project population included established chronic (>3 month) musculoskeletal, LBP
patients actively participating in multimodal therapies. The 5A’s Behavior Change Model provided the framework for promotion of self-care management and use of multi-modalities (Figure 1). The 5A’s is a validated framework that has been utilized extensively for chronic conditions requiring behavior change like obesity and smoking cessation (Glasgow, Emont, & Miller, 2006). The framework is appropriate for pain management because the approach to improve self-care management. The 5A’s include “Ask, Assess, Advise, Assist, and Arrange”. Additional recorded data includes pain scales (Numeric Pain Rating Scale [NPRS]), quality of life scores (American Chronic Pain Association’s Quality of Life Scale [QOL] Figure 2), and number of opioid pain medications (PM). Non-opioid pharmacologic interventions were considered self-promoting behaviors and included topical analgesics/patches, anti-convulsant, anti-seizure, muscle relaxants without benzodiazepine, and acetaminophen/nonsteroidal anti-inflammatory drugs. A goal score of 5 was used for NPRS and QOL scores.

Data collection conducted 5 months prior to project implementation provided demographics of the general population within the pain clinic. Out of 82 patients, 40% of randomized patients visited for LBP. Most patients are females between the ages of 60 to 80 with a body mass index greater than 25. The top two disturbances in patient perceived quality of life included sleep and exercise. Pain and quality of life scores for 5 randomized LBP patients from predata collection revealed a NPRS average of 6.2, average QOL 4.6, and PM average was 0.4 opioid medications (Figure 3). The random pre-intervention population NPRS or QOL averages did not meet the goal score which further showed areas for improvement. Only 29% the patients had a solidified follow-up
regimen, and 80% of the patients needed to schedule another appointment after their unplanned pain procedures.

The foundational question constructing the evidence for the project is: in chronic lower back pain patients would a monthly telephone-follow up post-clinic visit improve patient perceived quality of life and decrease patient reported pain and opioid consumption. The evidence-based practice (EBP) project was formulated based on the Iowa Model. The Iowa model is a validated framework that implements systematic multistep processes to guide changes in healthcare (Buckwalter et al., 2017). One of the most important steps is integration and sustainability of the project. A unique aspect of this EBP is that the project is extended by an additional 6 months utilizing another doctoral student. Our goal in having continued presence is to further embed the change in practice as well as modify areas of improvement.

Implementation of the EBP utilized in-person and telephone interviews was modeled from the 5A’s behavior intervention model ([Figure 1] U.S. Preventive Services Task Force, 2015). The 5 A’s behavior intervention model is a validated intervention that has been successfully utilized for improvement of chronic illness care by promoting patient driven behavior change.

**Literature Review**

A review of literature was conducted to provide support for the project. The literature review utilized the following search engines: NIH, Department of Health and Human Resources, CDPH, California Health Care Foundation, CINAHL, and PubMed. Keywords used for the search engines included: (Lower) back pain, motivational interview, telephone base follow-up/interview/coaching, quality of life, nursing
Theoretical model, and pain. The keywords were combined utilizing Medical Subject Headings (MeSH), and depending on the search engine utilized, yielded over 1,000 articles. Articles were narrowed by only including English, adult patients, published after 2011, and no animals. Results of the literature review included 20 articles that supported the use of motivational interviewing for chronic pain in lower back pain patients. Of these articles, seven were evaluated for their strength of evidence on a scale of 1-6. One article was ranked level I as a meta-analysis, and six were ranked as level II which is randomized control trials. The articles assisted in structuring the intervention and potential areas of analysis. Evidence-based interventions included in the study were:

1) Follow-up by a Nurse Practitioner (NP); 2) 5A’s framework to develop a questionnaire for patient driven change; 3) assess patient perceived pain, QOL, and number of opioid medications prescribed; 4) promote patient centered change in behavior through MI.

**Telephone Follow-up by Nurse Practitioner**

The project utilized a monthly telephone follow-up call to chronic pain patients as a cost effective and proactive follow-up method for patients. Nurse Practitioner led telephone follow-ups has been shown in the literature to be an effective method of promoting behavior change and managing chronic pain. In a study by Kroenke et al. (2014) found that patients who were called on a monthly basis to assess their pain and how the pain interferes with the patient’s activities of daily living had a 1 point decrease in reported pain and reported a 30% improvement in perceived pain. Another study noted that proactive calling on behalf of the provider to the patient to discuss pain resulted in a decrease of healthcare resources due to better management of external
Additional barriers (Bhimani et al., 2017). Additionally, utilizing telephone calls to deliver self-management strategies in chronic pain patients delivers a multimodal approach maximizing the effects of addressing pain medications, behavior change therapy, and ultimately resulting in decreased pain and improved QOL (Bair et al., 2015).

*5A’s Framework for Patient Driven Change*

Qualitative data was collected using a 5A’s guided questionnaire during the initial patient visit and with each monthly phone call. The questionnaire utilized the 5A’s behavior change model by asking the following questions: (a) ask the patient their readiness for utilizing self-promoting behaviors and reduction of opioids, (b) assess the patients willingness to participate in self-promoting behaviors, (c) advise the patient on how to utilize self-promoting behaviors, (d) assist the patient in coordinating access to alternative therapies, exercise, and nutrition advise, (e) arrange for follow-up of the patient with the provider within an allotted time. The American Society of Anesthesiologists (ASA) in their practice guidelines strongly recommend that direct and ongoing contact with the patient for their individualized treatment plan should conducted on a continual basis (2010). In addition, ASA suggests that multimodal interventions should be utilized for management of chronic pain. The 5A’s Model promotes behavior change through a step-wise delivery of validated interventions (Glasgow, Emont, & Miller, 2006). Each question in the model addresses a physical, functional, psychological, or social aspect of patient care which is a recommendation of the ASA for chronic pain management.

*Assessment of Pain, Quality of Life, and Number of Pain Medications*
The quantitative measurements in the project included the validated tools of numeric pain scale (NPS) for patient reported pain, quality of life utilizing the American Chronic Pain Association quality of life scale (QOL scale), and the recorded number of opioid pain medications (PM) that the patient was currently taking. The NPS was utilized because of its ability to be utilized verbally and is commonly used in the United States healthcare system. Studies have shown this validated tool is the preferred method for measuring chronic pain because of its comprehensibility and feasibility to be completed (Hawker, Mian, Kenderska, & French, 2011). Additionally, the NPS is the tool most utilized by UC Health System. Studies show patients with LBP have a lower perception of their health and well-being. Measuring QOL provides a numeric value that assists in evaluating patient focused behavior change (Hidler, Whitehurst, Thomas, and Foster, 2015).

Promote Patient Centered Behavior Change

Motivational interviewing (MI) has been used by multiple studies to implement a biophysical approach to create meaningful interactions between the provider and involves active participation by the patient to reduce pain and increase quality of life (Vong et al., 2011). MI focuses attention onto the client to inspire them to improve their self-belief and behaviors to achieve desired outcomes. In a study by Vong et al., patients showed positive behaviors changes such as exercise, or decrease consumption of opioid medication with the use of MI. Behavior adjustment is achieved through inward exploration of reasons for uncertainty and resolution of that uncertainty (Chilton, Pires-Yfantouda, & Wylie, 2012). Another study utilized MI to create patent centered cgoals of care with the patient, assist patients in goal achieving tasks, and develop a trusting
relationship with their provider (Harman, MacRae, Vallis, & Bassett, 2014). The goal of MI is to increase QOL, decrease the patient’s pain score, and develop a sense of self-worth in the patient by achieving their set goals of care (Harman et al., 2014). The Centers for Disease Control and Prevention (CDC) recommends that primary care physicians incorporate patient motivated behavior change into their practice (2016). ASA (2010) guidelines agree that cognitive behavioral therapy should be used for management of chronic pain.

**Methods**

**Study Design**

The intervention is an evidence-based quality improvement project conducted over the course of 6 months. Following completion of the project a program evaluation was conducted to assess for modifications for phase II of the project. Effectiveness of the intervention was calculated by comparing the average NPRS, QOL, and PM over a 6-month period.

Members of the project team included one doctoral student as the project lead, and one faculty advisor who served as principal investigator. Two anesthesiologists participated in patient recruitment. The project lead conducted all patient interviews, recording and synthesis of data. All qualitative and quantitative data was recorded and dispersed through the clinics electronic health record system.

**IRB Approval**

The EBP project titled “Motivation Interview in Follow-Up Telephone Calls to Pain Patients to Improve Patient Outcomes” was approved by UC San Diego Human Research Protections Program in October of 2017. The EBP was further approved by
the IRB at University of San Diego in November of 2017. No personal patient
identifiers were used with any participant in the study. Patient identifiers were numbers
known only to the principal investigator. Prior to implementation of the project the
physician and the doctoral student obtained verbal consent and an information sheet was
provided detailing the goals of the project. There are no potential conflicts of interests or
financial conflicts to disclose.

**Patient Demographics**

Preliminary data collected indicated that LBP patients were the focus population.
The DNP student prior to physician clinic would review records for established, chronic
LBP patients participating in multimodality treatments. Clinic reviews started in July
2018 and continued until December 2018. Outcomes assessed at each initial interaction
included NPRS, QOL, and PM, and subsequently would include the patient
questionnaire. All patients were Caucasian and ranged in age from 54 to 78 years old
with an average of 64 years. Four of the patients were male and one patient was female.
All of the male patients were overweight, and the average BMI was 26.4 kg/m$^2$ placing
them in the overweight category, but at a lower BMI than the national average (CDC,
2017). Of the patients, 40% were diagnosed with anxiety. Patient diagnoses included in
analysis: lower back pain (LBP), LBP with radiculopathy, lumbar facet arthropathy,
spinal stenosis of lumbar region, and lumbar spondylosis.

**Project Implementation**

The project started with a predata collection followed by phase I which was
implementation of the project and concluded with a program evaluation prior to start of
phase II of the EBP. Predata collection was performed over the course of 3 months
The DNP students accompanied the anesthesiologist during their scheduled clinic time to assess each patient. The patients planned follow-up, pain score, quality of life score, demographics, type of pain, and treatment were recorded. Following the 3 month period the data was analyzed to guide the proceedings for the EBP.

The EBP project started in July 2018 and ended in December 2018. The DNP student prior to each provider's clinic day would review the chart for eligible patients. Eligible patients were seen in the clinic alongside the anesthesiologist. Patients were given an information sheet detailing the project and verbal consent was obtained.

Baseline data including NPRS and QOL score was recorded during the initial visits and once a month with each telephone encounter starting two weeks after the initial office visit, and then on a monthly basis for six months. The questionnaire was modeled by the 5A’s framework. Pain medications, exercise, additional treatment modalities (physical therapy, acupuncture, chiropractor, and psychology), and opioid tapering were documented and recorded in the patients EHR chart and sent to the physicians. At the conclusion of each telephone session patient care plan and follow-up was reviewed.

After completion of phase I in December 2018 program evaluation was completed.

Data/Results

Results of phase I of the EBP NP-led telephone follow-up utilizing the 5A’s model for behavioral change increased patient perceived quality of and decreased overall patient perceived pain score among chronic LBP patients over a 6 month period (Figure 4). The average NPRS score improved from 4.6 down to 3.8 (-0.8) almost a 1 point overall decrease. The average QOL score had the most dramatic increase from 4.6
to 6 (+1.4) which is a change on the scale from: “Being able to do simple chores around
the house and minimal activities outside of the home two hours a week” to
“Work/volunteer limited hours and take part in limited social activities on weekends”
(American Chronic Pain Association, 2019). Both pain and QOL scores met their 5-
score goal. PM increased by 0.2, almost making the total average 1 pill amongst all the
chronic LBP patients. Of the patients, 4 out of 5 completed all 6 monthly telephone
follow-ups with only one patient missing 1 month due to transitioning to outside the
healthcare system.

Utilization of multimodal therapies concluded (Figure 5):

*Psycho-behavioral:* Of the 5 patients 2 of them had an underlying psychological
condition. Both patients were diagnosed, but not currently in treatment for anxiety.
Neither patient was on medication for anxiety.

*Procedural:* All of the patients had orders placed for procedures. Procedures prescribed
included lumbar epidural steroid injections, chemodenervation of the lumbar area, and
sacroiliac joint injections. All procedures were performed within UC San Diego Pain
clinic at a different date.

*Physical:* Of the patients, 60% participated in a form of physical activity or was
instructed by the provider to perform exercises. Two of the three patients participated in
self-reported exercise. One of the two patients in conjunction to exercise worked with
water therapy which was coordinated by the clinic. The third patient was referred to and
participated in a physical and rehabilitation physician.

*Pharmacological:* Only one patient (20%) was treated with a medication. This was
prescribed post major surgical procedure with a solidified plan for dose reduction and
stop date. Other patients were prescribed opioid medication but were not included in the study because they were not prescribed by the anesthesiologist. Any opioid medication, if deemed appropriate to the patient, was written as a recommendation in the provider note but was deferred to the primary provider for prescription.

Discussion

Treating chronic LBP is a difficult condition without instant resolution. This EBP supports alternatives for managing pain. The NP-led telephone follow-up project achieved two of the goals established by multiple pain organizations by decreasing patient perceived pain and improving QOL scores. Pain scores improved by almost 1-point reduction from 5 to 4; and QOL increased by an impressive 1.4 points from 4.6 to 6. Compliance was at 80% over a 6-month period. To note, every patient who was consented for the project agreed to participate. Each telephone encounter was allotted 15 minutes, multiple times follow-up phone calls occurred over 30 minutes which was a benefit and a limitation.

The intervention proved to be meaningful, and highlighted the positive difference achieved when patients are supported and able to make self-changing behaviors. Quantitative data showed pain scores that peaked in October and then drastically declined in December. This can be attributed to an increase need for procedural interventions prior to the holiday season as outlined in patient interviews. Patients also noted an increase in stress prior to the holidays. One patient had major back surgery prior to October which led to high levels of pain, improving over 3 months. Related to the surgery there was a slight increase in pain medication prescription, but pain improved as medication was limited with a planned opioid taper.
QOL scores reflected patient appreciation of a clinic call, and feelings of individualized treatment. Patients were eager to discuss efficacy of procedures and how they utilized self-care such as exercise, improved sleep, alternate therapies or overall sense of wellbeing.

UCSD hospital currently has telemedicine capabilities. It is accredited as a Clear Health Quality Institute (CHQI) meaning the health system can provide consumer-to-provider, provider-to-consumer, and provider-to-provider telemedicine. Reimbursement for telemedicine at UCSD hospital is achieved through contracts with participating clinics. Providers using telemedicine act as a consultant and as such do not prescribe treatments or medications. Appointments at UCSD Pain Clinic are typically 30-minutes and for some patients that is an insufficient amount of time. Telehealth is not utilized by the Pain Clinic at UCSD, but continuation of the project could provide an incentive to assess the ability to be reimbursed directly for telephone calls to patients.

**Implications for Nursing**

As shown by the increased perception of QOL, the 5 A’s framework is a valuable tool for promoting self-care behaviors in patients. The ability of the 5 A’s framework to be tailored to address the individualized needs of each patients promoted a sense of independence. Patients were able to evaluate their own goals and define their role in achieving pain relief. As a provider, the 5 A’s allowed the NP to guide the patient in a supportive role that fostered a symbiotic patient-provider relationship. The results supported the need for multimodal approach utilizing scheduled follow-up, procedures, and exercise to decrease pain. For phase II, DNP students are focusing on increasing patient study size and return in clinic visits with the provider.
Limitations/Sustainability

The major limitation associated with the project was small sample size. At the pain clinic there are no nurses or nurse practitioners. Much of the project was collecting and analyzing predata to show a gap in care at the clinic, and how a nurse practitioner intervention is beneficial. Positive results from the EBP project support the need for NP-led follow-up for LBP patients, and would be further enforced with larger sample size.

Phase II of the project aims at least double the current sample size. In addition, this project was performed in a wealthy urban area that primarily serves older, Caucasian adults. Implementation and feasibility of the project could be better assessed with increased exposure to rural and minority population.

Sustainability can be achieved by a dedicated staffer. Currently, the two phases last 6 months and are performed by DNP students. However, as outlined in the cost benefit analysis it would be cost effective to hire a medical assistant to perform telephone follow-up on a continual basis. Other options include exploration into a NP presence within the clinic to provide close follow-up.

Cost Benefit Analysis

The UCSD pain clinic averages 2,000 to 3,000 new LBP patients yearly. There are 9 providers within the clinic and two participated in the nurse practitioner protocol. If 20% of patients seen by the two providers return to the clinic once of an additional visit as a result of the telephone follow-up there is a potential profit of $13,132.84 annually. In addition, from our sample size 100% of patients received an injection to treat LBP within 6 months. Conservatively, if only 80% of new LBP receive one injection twice a year there is a potential profit of $73,682.69. If a medical assistant was
hired to make telephone calls the starting salary at UCSD is $37,416.96 there would still
be a profit of $50,549.80. This project cost nothing to implement besides time and one
person to perform calls.

Conclusion

Phase I of the EBP project supported the use of a NP driven telephone follow-up
to support and improve outcomes amongst chronic LBP patients. One of the greatest
areas of potential improvement for pain management is the perception of quality of life.
The adaptability of the 5A’s framework and the promotion of self-care in patients
supports a sense of self worth and independence in the patient. The utilization of
telephone calls showed to be a viable and cost-effective method of interaction with
patients that promotes healthcare access. With continuation of the project, goal is to
provide further insight into the importance of close follow-up with chronic pain patients
and provide insight into varying methods of pain management.
Figure 1: Explanation of 5A’s Framework
Figure 2: The American Chronic Pain Association Quality of Life Scale
Figure 3: Preliminary baseline data number of opioid medications, quality of life, and pain score.
Figure 4

Figure 4: Comparison of the average pain scores, quality of life scores, and number of opioid pain medications over six months.
Figure 5: Utilization of multimodal therapies amongst sample population
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