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Running head: ENHANCING CHRONIC PAIN MANAGEMENT

Enhancing Chronic Pain Management Motivational Interview Among Lower Back Pain Patients

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Abstract

Purpose: Untreated chronic pain is a nationwide epidemic affect individual 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 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.

001 Background

002 The aim of this paper is to support the use of monthly telephone follow-up calls
003 to chronic lower back pain (LBP) patients to improve patient perceived quality of life
004 and decrease patient reported pain and opioid consumption. One of the most common,
005 and costly health conditions affecting United States (US) citizens is LBP. More U.S.
006 adults are affected by common chronic pain conditions than by heart disease, diabetes,
007 and cancer combined (Institute of Medicine, 2011). This condition affects
008 approximately 80% of people at some point in their lives, and symptom relief is needed
009 to reduce the burden of physical, psychological, and financial costs associated with LBP
010 (National Institute of Neurological Disorders and Stroke (NIH), 2014). Physically,
011 patients may be unable to work leading to disability and unemployment. In 2017 the
012 California Department of Public Health (CDPH) found that 28 out of every 100,000
013 California citizens had a work-related skeletal (back) injury and required hospitalization
014 costing upwards of \$10 billion dollars for workman's compensation (CDPH, 2017).
015 Nationally, the direct cost of treating LBP in 2014 ranged from \$39 to \$78 billion,
016 which is a conservative number considering the potential for unaccounted costs (Spine
017 Research Institute (SRI), 2014). Direct costs included traditional treatments such as
018 medication, surgery, and workman's compensation. Indirect costs were estimated to
019 total \$62 billion and considered factors such as lost productivity days and inability to fill
020 jobs vacancies (SRI, 2014). Psychologically, chronic pain is linked to anxiety and
021 depression placing patients at risk for opioid dependency (Goseling, Lin, & Clauw,
022 2018)

023

024 High chances of relapsed pain within three months of initial pain consultation
025 can frustrate healthcare providers resulting in passive methods of pain control like
026 opioid medication (Vong et al., 2011). This places patients at an increased risk of
027 becoming “dependent” on opioid medication and ignores alternatives such as self-
028 promoting techniques to manage the pain (Vong et al., 2011). Daily over 130 people in
029 the United States die from opioid related overdoses, and upwards of \$78.5 billion is
030 spent annually on health and social costs related to opioid abuse (National Institute on
031 Drug Abuse, 2019). In California there were over 2,000 overdose deaths reported in half
032 a years’ time and in that same year \$4.26 million was spent on healthcare costs related
033 to opioid abuse (California Healthcare Foundation, 2016). Chronic conditions such as
034 LBP contribute to the opioid epidemic due to the debilitating nature of the disease. The
035 over utilization of opioids has become an epidemic in our country creating a new Health
036 People 2020 and 2030 goal to reduce the nonmedical use of opioids (2018). Opioid
037 medications are frequently inappropriately prescribed for treatment of LBP. According
038 to certain insurance reports, over half of individuals who are regular users of opioid
039 medications report LBP (Deyo, Von Korff, & Duhrkoop, 2015). This mismanagement
040 of finances and care for LBP patients contributes to the overwhelming total cost of
041 managing chronic pain.

042 The doctoral project was implemented at the University of California at San
043 Diego Center for Pain Medicine which serves as both a treatment facility for complex
044 chronic pain conditions and provides consultation to primary care providers for
045 treatment plans. Of the patient population, 40% of patients are treated for LBP. The
046 project population included established chronic (>3 month) musculoskeletal, LBP

047 patients actively participating in multimodal therapies. The 5A's Behavior Change
048 Model provided the framework for promotion of self-care management and use of
049 multi-modalities (Figure 1). The 5A's is a validated framework that has been utilized
050 extensively for chronic conditions requiring behavior change like obesity and smoking
051 cessation (Glasgow, Emont, & Miller, 2006). The framework is appropriate for pain
052 management because the approach to improve self-care management. The 5A's include
053 "Ask, Assess, Advise, Assist, and Arrange". Additional recorded data includes pain
054 scales (Numeric Pain Rating Scale [NPRS]), quality of life scores (American Chronic
055 Pain Association's Quality of Life Scale [QOL] Figure 2), and number of opioid pain
056 medications (PM). Non-opioid pharmacologic interventions were considered self-
057 promoting behaviors and included topical analgesics/patches, anti-convulsant, anti-
058 seizure, muscle relaxants without benzodiazepine, and acetaminophen/nonsteroidal anti-
059 inflammatory drugs. A goal score of 5 was used for NPRS and QOL scores.

060 Data collection conducted 5 months prior to project implementation provided
061 demographics of the general population within the pain clinic. Out of 82 patients, 40%
062 of randomized patients visited for LBP. Most patients are females between the ages of
063 60 to 80 with a body mass index greater than 25. The top two disturbances in patient
064 perceived quality of life included sleep and exercise. Pain and quality of life scores for 5
065 randomized LBP patients from predata collection revealed a NPRS average of 6.2,
066 average QOL 4.6, and PM average was 0.4 opioid medications (Figure 3). The random
067 pre-intervention population NPRS or QOL averages did not meet the goal score which
068 further showed areas for improvement. Only 29% the patients had a solidified follow-up
069

093 theoretical model, and pain. The keywords were combined utilizing Medical Subject
094 Headings (MeSH), and depending on the search engine utilized, yielded over 1,000
095 articles. Articles were narrowed by only including English, adult patients, published
096 after 2011, and no animals. Results of the literature review included 20 articles that
097 supported the use of motivational interviewing for chronic pain in lower back pain
098 patients. Of these articles, seven were evaluated for their strength of evidence on a scale
099 of 1-6. One article was ranked level I as a meta-analysis, and six were ranked as level II
100 which is randomized control trials. The articles assisted in structuring the intervention
101 and potential areas of analysis. Evidence-based interventions included in the study were:
102 1) Follow-up by a Nurse Practitioner (NP); 2) 5A's framework to develop a
103 questionnaire for patient driven change; 3) assess patient perceived pain, QOL, and
104 number of opioid medications prescribed; 4) promote patient centered change in
105 behavior through MI.

106 *Telephone Follow-up by Nurse Practitioner*

107 The project utilized a monthly telephone follow-up call to chronic pain patients
108 as a cost effective and proactive follow-up method for patients. Nurse Practitioner led
109 telephone follow-ups has been shown in the literature to be an effective method of
110 promoting behavior change and managing chronic pain. In a study by Kroenke et al.
111 (2014) found that patients who were called on a monthly basis to assess their pain and
112 how the pain interferes with the patient's activities of daily living had a 1 point decrease
113 in reported pain and reported a 30% improvement in perceived pain. Another study
114 noted that proactive calling on behalf of the provider to the patient to discuss pain
115 resulted in a decrease of healthcare resources due to better management of external

116 barriers (Bhimani et al., 2017). Additionally, utilizing telephone calls to deliver self-
117 management strategies in chronic pain patients delivers a multimodal approach
118 maximizing the effects of addressing pain medications, behavior change therapy, and
119 ultimately resulting in decreased pain and improved QOL (Bair et al., 2015).

120 *5A's Framework for Patient Driven Change*

121 Qualitative data was collected using a 5A's guided questionnaire during the
122 initial patient visit and with each monthly phone call. The questionnaire utilized the
123 5A's behavior change model by asking the following questions: (a) ask the patient their
124 readiness for utilizing self-promoting behaviors and reduction of opioids, (b) assess the
125 patients willingness to participate in self-promoting behaviors, (c) advise the patient on
126 how to utilize self-promoting behaviors, (d) assist the patient in coordinating access to
127 alternative therapies, exercise, and nutrition advise, (e) arrange for follow-up of the
128 patient with the provider within an allotted time. The American Society of
129 Anesthesiologists (ASA) in their practice guidelines strongly recommend that direct and
130 ongoing contact with the patient for their individualized treatment plan should
131 conducted on a continual basis (2010). In addition, ASA suggests that multimodal
132 interventions should be utilized for management of chronic pain. The 5A's Model
133 promotes behavior change through a step-wise delivery of validated interventions
134 (Glasgow, Emont, & Miller, 2006). Each question in the model addresses a physical,
135 functional, psychological, or social aspect of patient care which is a recommendation of
136 the ASA for chronic pain management.

137 *Assessment of Pain, Quality of Life, and Number of Pain Medications*

138

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

151 *Promote Patient Centered Behavior Change*

152 Motivational interviewing (MI) has been used by multiple studies to implement
153 a biophysical approach to create meaningful interactions between the provider and
154 involves active participation by the patient to reduce pain and increase quality of life
155 (Vong et al., 2011). MI focuses attention onto the client to inspire them to improve their
156 self-belief and behaviors to achieve desired outcomes. In a study by Vong et al., patients
157 showed positive behaviors changes such as exercise, or decrease consumption of opioid
158 medication with the use of MI. Behavior adjustment is achieved through inward
159 exploration of reasons for uncertainty and resolution of that uncertainty (Chilton, Pires-
160 Yfantouda, & Wylie, 2012). Another study utilized MI to create patient centered goals
161 of care with the patient, assist patients in goal achieving tasks, and develop a trusting

162 relationship with their provider (Harman, MacRae, Vallis, & Bassett, 2014). The goal of
163 MI is to increase QOL, decrease the patient's pain score, and develop a sense of self-
164 worth in the patient by achieving their set goals of care (Harman et al., 2014). The
165 Centers for Disease Control and Prevention (CDC) recommends that primary care
166 physicians incorporate patient motivated behavior change into their practice (2016).
167 ASA (2010) guidelines agree that cognitive behavioral therapy should be used for
168 management of chronic pain.

169

Methods

Study Design

171 The intervention is an evidence-based quality improvement project conducted
172 over the course of 6 months. Following completion of the project a program evaluation
173 was conducted to assess for modifications for phase II of the project. Effectiveness of
174 the intervention was calculated by comparing the average NPRS, QOL, and PM over a
175 6-month period.

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

IRB Approval

182 The EBP project titled "Motivation Interview in Follow-Up Telephone Calls to
183 Pain Patients to Improve Patient Outcomes" was approved by UC San Diego Human
184 Research Protections Program in October of 2017. The EBP was further approved by

185 the IRB at University of San Diego in November of 2017. No personal patient
186 identifiers were used with any participant in the study. Patient identifiers were numbers
187 known only to the principal investigator. Prior to implementation of the project the
188 physician and the doctoral student obtained verbal consent and an information sheet was
189 provided detailing the goals of the project. There are no potential conflicts of interests or
190 financial conflicts to disclose.

191 *Patient Demographics*

192 Preliminary data collected indicated that LBP patients were the focus population.
193 The DNP student prior to physician clinic would review records for established, chronic
194 LBP patients participating in multimodality treatments. Clinic reviews started in July
195 2018 and continued until December 2018. Outcomes assessed at each initial interaction
196 included NPRS, QOL, and PM, and subsequently would include the patient
197 questionnaire. All patients were Caucasian and ranged in age from 54 to 78 years old
198 with an average of 64 years. Four of the patients were male and one patient was female.
199 All of the male patients were overweight, and the average BMI was 26.4 kg/m² placing
200 them in the overweight category, but at a lower BMI than the national average (CDC,
201 2017). Of the patients, 40% were diagnosed with anxiety. Patient diagnoses included in
202 analysis: lower back pain (LBP), LBP with radiculopathy, lumbar facet arthropathy,
203 spinal stenosis of lumbar region, and lumbar spondylosis.

204 *Project Implementation*

205 The project started with a predata collection followed by phase I which was
206 implementation of the project and concluded with a program evaluation prior to start of
207 phase II of the EBP. Predata collection was performed over the course of 3 months

208 (January 2018-March 2018). The DNP students accompanied the anesthesiologist
209 during their scheduled clinic time to assess each patient. The patients planned follow-up,
210 pain score, quality of life score, demographics, type of pain, and treatment was
211 recorded. Following the 3 month period the data was analyzed to guide the proceedings
212 for the EBP.

213 The EBP project started in July 2018 and ended in December 2018. The DNP
214 student prior to each providers clinic day would review the chart for eligible patients.
215 Eligible patients were seen in the clinic alongside the anesthesiologist. Patients were
216 given an information sheet detailing the project and verbal consent was obtained.
217 Baseline data including NPRS and QOL score was recorded during the initial visits and
218 once a month with each telephone encounter starting two weeks after the initial office
219 visit, and then on a monthly basis for six months. The questionnaire was modeled by the
220 5A's framework. Pain medications, exercise, additional treatment modalities (physical
221 therapy, acupuncture, chiropractor, and psychology), and opioid tapering were
222 documented and recorded in the patients EHR chart and sent to the physicians. At the
223 conclusion of each telephone session patient care plan and follow-up was reviewed.
224 After completion of phase I in December 2018 program evaluation was completed.

225 **Data/Results**

226 Results of phase I of the EBP NP-led telephone follow-up utilizing the 5A's
227 model for behavioral change increased patient perceived quality of and decreased
228 overall patient perceived pain score among chronic LBP patients over a 6 month period
229 (Figure 4). The average NPRS score improved from 4.6 down to 3.8 (-0.8) almost a 1
230 point overall decrease. The average QOL score had the most dramatic increase from 4.6

231 to 6 (+1.4) which is a change on the scale from: “Being able to do simple chores around
232 the house and minimal activities outside of the home two hours a week” to
233 “Work/volunteer limited hours and take part in limited social activities on weekends”
234 (American Chronic Pain Association, 2019). Both pain and QOL scores met their 5-
235 score goal. PM increased by 0.2, almost making the total average 1 pill amongst all the
236 chronic LBP patients. Of the patients, 4 out of 5 completed all 6 monthly telephone
237 follow-ups with only one patient missing 1 month due to transitioning to outside the
238 healthcare system.

239 Utilization of multimodal therapies concluded (Figure 5):

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

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

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

252 *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

253 stop date. Other patients were prescribed opioid medication but were not included in the
254 study because they were not prescribed by the anesthesiologist. Any opioid medication,
255 if deemed appropriate to the patient, was written as a recommendation in the provider
256 note but was deferred to the primary provider for prescription.

257

Discussion

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

267 The intervention proved to be meaningful, and highlighted the positive
268 difference achieved when patients are supported and able to make self-changing
269 behaviors. Quantitative data showed pain scores that peaked in October and then
270 drastically declined in December. This can be attributed to an increase need for
271 procedural interventions prior to the holiday season as outlined in patient interviews.
272 Patients also noted an increase in stress prior to the holidays. One patient had major
273 back surgery prior to October which led to high levels of pain, improving over 3
274 months. Related to the surgery there was a slight increase in pain medication
275 prescription, but pain improved as medication was limited with a planned opioid taper.

276 QOL scores reflected patient appreciation of a clinic call, and feelings of individualized
277 treatment. Patients were eager to discuss efficacy of procedures and how they utilized
278 self-care such as exercise, improved sleep, alternate therapies or overall sense of
279 wellbeing.

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

289 **Implications for Nursing**

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

299 *Limitations/Sustainability*

300 The major limitation associated with the project was small sample size. At the
301 pain clinic there are no nurses or nurse practitioners. Much of the project was collecting
302 and analyzing predata to show a gap in care at the clinic, and how a nurse practitioner
303 intervention is beneficial. Positive results from the EBP project support the need for NP-
304 led follow-up for LBP patients, and would be further enforced with larger sample size.
305 Phase II of the project aims at least double the current sample size. In addition, this
306 project was performed in a wealthy urban area that primarily serves older, Caucasian
307 adults. Implementation and feasibility of the project could be better assessed with
308 increased exposure to rural and minority population.

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

314 *Cost Benefit Analysis*

315 The UCSD pain clinic averages 2,000 to 3,000 new LBP patients yearly. There
316 are 9 providers within the clinic and two participated in the nurse practitioner protocol.
317 If 20% of patients seen by the two providers return to the clinic once of an additional
318 visit as a result of the telephone follow-up there is a potential profit of \$13,132.84
319 annually. In addition, from our sample size 100% of patients received an injection to
320 treat LBP within 6 months. Conservatively, if only 80% of new LBP receive one
321 injection twice a year there is a potential profit of \$73,682.69. If a medical assistant was

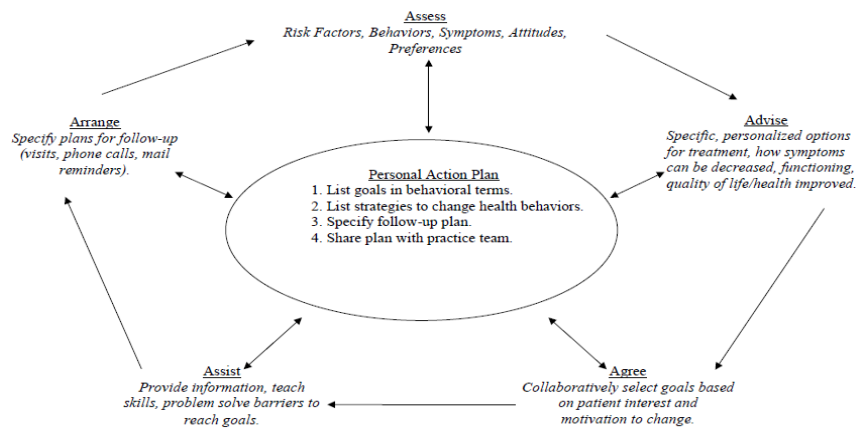
322 hired to make telephone calls the starting salary at UCSD is \$37,416.96 there would still
323 be a profit of \$50,549.80. This project cost nothing to implement besides time and one
324 person to perform calls.

325

Conclusion

326 Phase I of the EBP project supported the use of a NP driven telephone follow-up
327 to support and improve outcomes amongst chronic LBP patients. One of the greatest
328 areas of potential improvement for pain management is the perception of quality of life.
329 The adaptability of the 5A's framework and the promotion of self-care in patients
330 supports a sense of self worth and independence in the patient. The utilization of
331 telephone calls showed to be a viable and cost-effective method of interaction with
332 patients that promotes healthcare access. With continuation of the project, goal is to
333 provide further insight into the importance of close follow-up with chronic pain patients
334 and provide insight into varying methods of pain management.

Figure 1



From "Self-Management Aspects of the Improving Chronic Illness Care Breakthrough Series: Implementation With Diabetes and Heart Failure Teams." by R. E. Glasgow, M. M. Funell, A. E. Bonomi, C. Davis, V. Beckham, and E. H. Wagner, 2002, *Annals of Behavioral Medicine*, 24, p. 83. Copyright 2002 by Springer. Adapted with permission.

Figure 1: Explanation of 5A's Framework

Figure 2

Quality Of Life Scale
A Measure Of Function
For People With Pain

| | |
|-------------------------------------|---|
| 0 Non-functioning | Stay in bed all day Feel hopeless and helpless about life |
| 1 | Stay in bed at least half the day Have no contact with outside world |
| 2 | Get out of bed but don't get dressed Stay at home all day |
| 3 | Get dressed in the morning Minimal activities at home Contact with friends via phone, email |
| 4 | Do simple chores around the house Minimal activities outside of home two days a week |
| 5 | Struggle but fulfill daily home responsibilities. No outside activity Not able to work/volunteer |
| 6 | Work/volunteer limited hours Take part in limited social activities on weekends |
| 7 | Work/volunteer for a few hours daily. Can be active at least five hours a day. Can make plans to do simple activities on weekends |
| 8 | Work/volunteer for at least six hours daily Have energy to make plans for one evening social activity during the week Active on weekends |
| 9 | Work/volunteer/be active eight hours daily Take part in family life Outside social activities limited |
| 10 Normal Quality of Life | Go to work/volunteer each day Normal daily activities each day Have a social life outside of work |

Figure 2: The American Chronic Pain Association Quality of Life Scale

Figure 3

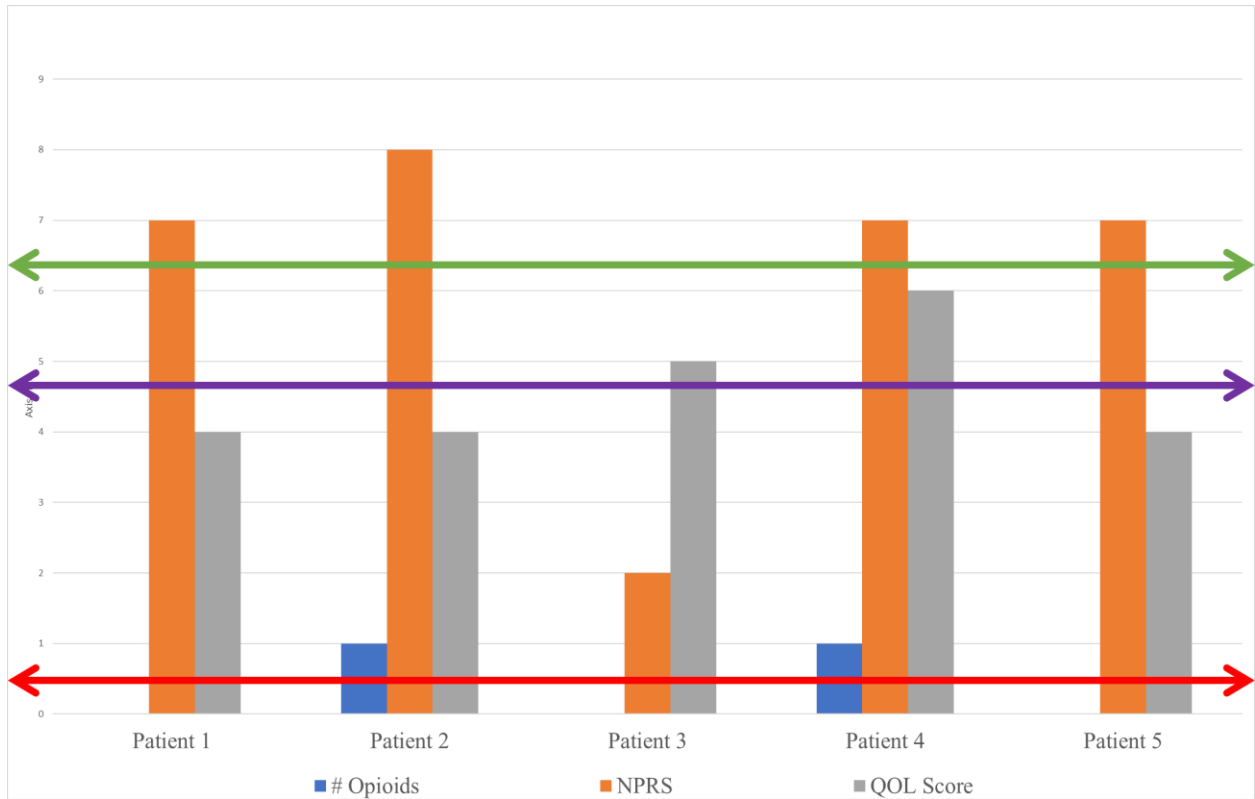


Figure 3: Preliminary baseline data number of opioid medications, quality of life, and pain score.

Figure 4

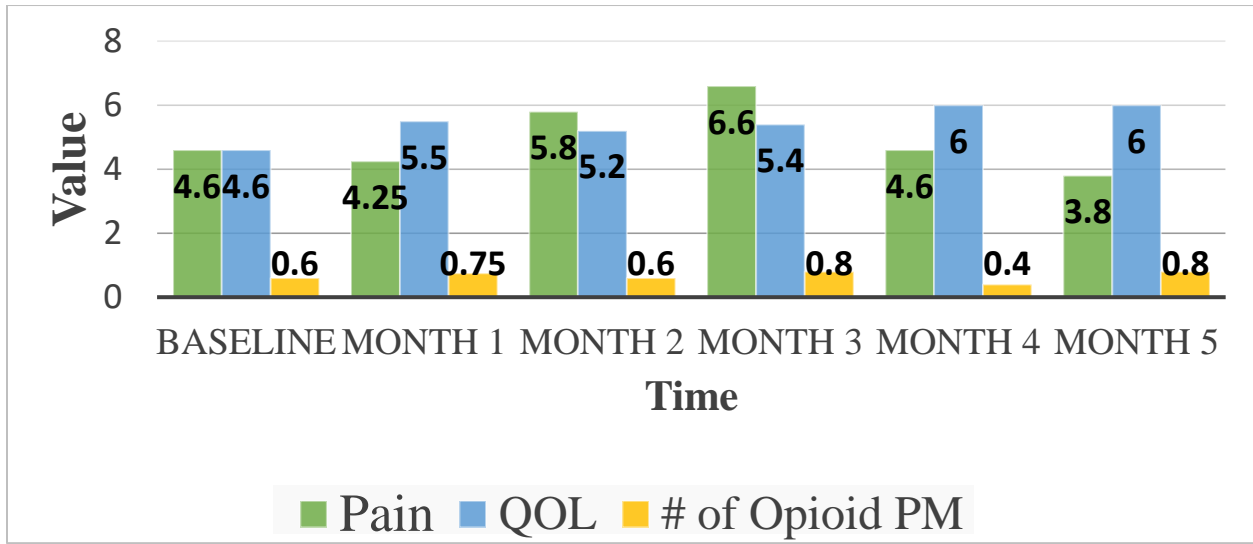


Figure 4: Comparison of the average pain scores, quality of life scores, and number of opioid pain medications over six months.

Figure 5

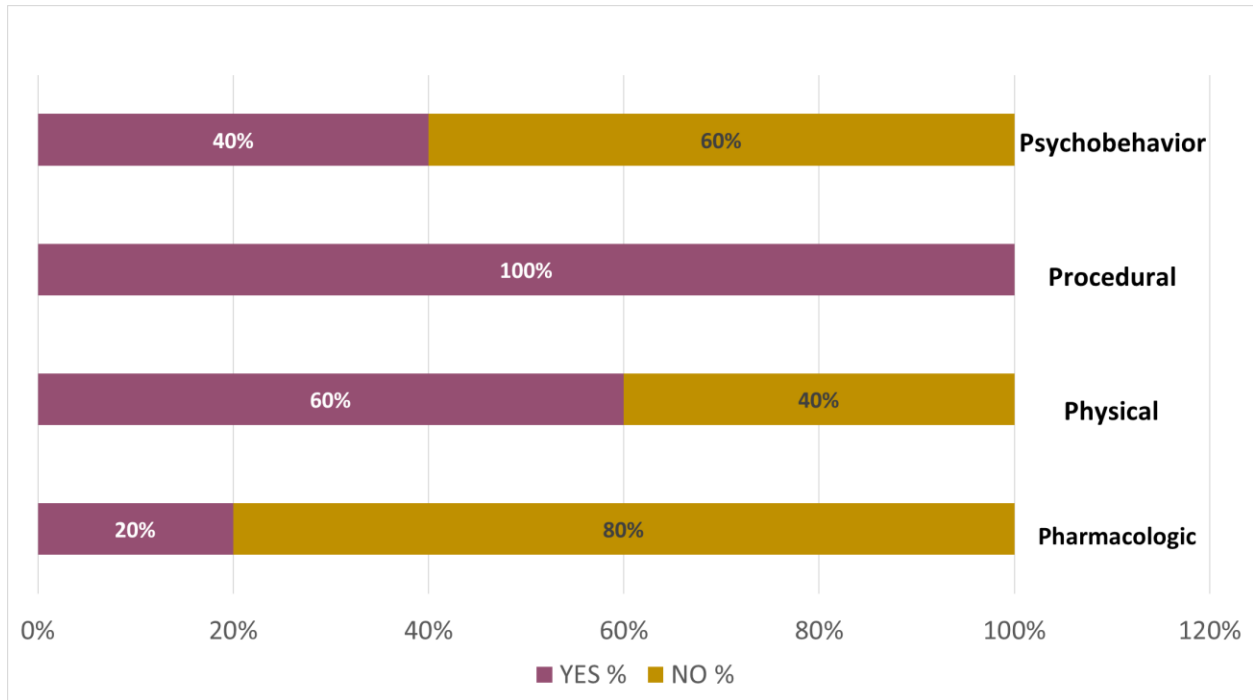


Figure 5: Utilization of multimodal therapies amongst sample population

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