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Optimizing Chronic Pain Management: Self-Care utilization among
Veterans with Post-Traumatic Stress Disorder

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Abstract

Purpose: To implement a chronic pain management regimen that utilizes a self-care approach, integrating all dimensions of the biopsychosocial model to optimally treat the complex needs of younger Veterans with comorbid PTSD and chronic pain. The project aims to provide more insight and knowledge on safer chronic pain management among Veterans, reflected by improvement in patient's pain level, quality of life, and depression.

Design: The project was implemented at the ASPIRE Center, a domiciliary residential rehabilitation treatment program for Veterans who suffer from PTSD and Traumatic Brain Injury. The 5A's behavior change model was utilized during clinic visits and during follow-up phone calls. During each month's clinic visit the provider and the Veteran discussed self-care modalities they thought would work best for them. Subsequent telephone follow-ups assessed the efficacy of the treatment and identified any barriers to treatment.

Results: The intervention gained modest improvements in pain level and quality of life, and a negative effect in depression symptoms. Results were affected by high drop-out rates as a result of irregular or unplanned discharges caused by multiple confounding factors. When surveyed post hoc, 97% of the participants felt the collaborative effort was beneficial.

Clinical Implications: Self-care utilization can provide a safe and effective way to manage chronic pain among Veterans with PTSD. This can be implemented in primary care and any site where effective chronic pain management is indicated. Overall, certain aspects of self-care interventions were effective in managing chronic pain.

Keywords: Veterans, chronic pain, PTSD, self-care, collaborative management

Background & Evidence for Problem

Pain management has now become a significant and challenging part of primary care. According to the National Institutes of Health (2010), pain affects more Americans than diabetes, heart disease and cancer combined, and it is a leading cause of disability affecting 76.2 million Americans. In 2008, approximately 100 million adults in the United States were impacted by chronic pain, with its national costs ranging from \$560 to \$635 billion annually (Gaskin & Richard, 2012). Managing chronic pain with opioids can result in multiple chronic problems, from something as common and simple as constipation to something more serious such as: opioid tolerance, dependence, addiction, diversion, and overdose that can sometimes lead to death. Nationwide, opioid prescriptions for analgesics nearly doubled since 1994 because the importance of treating pain became greatly recognized, but at the same time, the rates of opioid prescription misuse and overdose sharply increased, making it now a leading cause of death in the United States (Seal et al., 2012).

In 2016 the United States Surgeon General, Vivek H. Murthy, MD, sent a letter out to all medical providers at the Veterans Administration (VA) advising them of the increasing problems and devastating outcomes of the “opioid epidemic”. Approximately 60% of Veterans returning from deployments in the Middle East and 50% of older Veterans suffer from chronic pain (Childress, 2016). Many of the Veterans who have been injured during deployment also suffer from post-traumatic stress disorder (PTSD). According to the US Department of Veterans Affairs National Center for PTSD (2015), about 15% to 35% of patients with chronic pain also have PTSD, and only 2% of people who do not have chronic pain have PTSD. Another study showed that there is an

associated increased risk for adverse clinical results, such as opioid addiction and death, among Veterans of Operation Iraqi Freedom and Operation Enduring Freedom era, who have been diagnosed with PTSD and who have received opioids for pain, because of the co-occurrence of substance use disorders among Veterans with PTSD (Seal et al., 2012). Veterans who have been diagnosed with PTSD present with multiple and complex chronic symptoms including pain that is difficult to treat and can impact quality of life (Hawkins, Malte, Grossbard, & Saxon, 2015).

Individuals who suffer from chronic pain are at risk for having a lower quality of life compared to individuals with no chronic pain. According to Cardin et al. (2012), chronic pain can cause some biological and psychological changes in an individual which could lead to anxiety, depression, anger, and fear. However, symptoms of depression are probably the most common emotional responses to having chronic pain; this could negatively affect someone's ability to function and adapt to social life (Cardin et al., 2012). Limitation in the professional, social, and family life among individuals who suffer from back pain leads to the deterioration of the quality of life (Misiak & Snarska, 2014).

Description of Project and Context

This project was implemented at the ASPIRE Center, a domiciliary residential rehabilitation treatment program for Veterans who have been diagnosed with PTSD and Traumatic Brain Injury (TBI). The population of Veterans who qualify for admission into the ASPIRE Center are individuals who served in the Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn. Besides having PTSD as their main diagnosis, many of the Veterans who get admitted into the ASPIRE Center suffer

from moderate to severe chronic pain related to musculoskeletal injuries such as back, shoulders, hips, knees, ankles injuries, and from migraine headaches which may be related to their history of TBI. In addition, a good number of these Veterans who come into the program also have long histories of substance dependence such as alcohol, opioids, benzodiazepines, amphetamines, cocaine, and cannabis. During the implementation of this project at the ASPIRE Center, at least 50% of the resident Veterans had chronic pain, and 70% had a substance dependence disorder of one form or another. Because of the substance use histories of many of the ASPIRE Center Veterans, it is imperative that they were provided chronic pain management that did not include opioids, benzodiazepines or any addictive pharmaceutical agents. Chronic pain can lead to poor quality of life and increased depression, which could directly affect the Veterans' success in the program if their pain is not adequately treated. Outpatient veteran patients who suffer chronic pain need to be consistently educated on non-opioid methods and interventions for improved pain management.

Chronic pain is a significant burden to Veterans at the ASPIRE Center. Medical providers at the ASPIRE Center have an opportunity to provide these Veterans access to an array of multimodal integrative treatments in a successive manner that would be hard to attain in a traditional outpatient setting. It is the authors' hope that through optimization of the Veterans' pain treatment we might also advance their concurrent treatment for PTSD, and overall success at the ASPIRE Center. Bearing this in mind we pose the clinical question: Does utilization of the self-care model for chronic pain management combined with telephonic follow-up, improve pain, quality of life, and

depression, as compared to usual care, during the course of their PTSD treatment at the ASPIRE Center?

This evidence-based project involved conducting both in-person and telephonic interviews using the 5A's behavior intervention model (US Preventive Services Task Force, 2015). Assessment measures included Veterans' pain level using the numeric pain scale of 0/10 – 10/10, quality of life using the American Chronic Pain Association quality of life scale 0-10, and depression level by using PHQ – 9 questionnaire assessment tool. These measures were conducted for each clinic visit before and after self-care interventions. Between clinic visits, phone calls were made to all the participants to assess their pain level and quality of life. The goal of this project was to determine if utilization of self-care interventions can provide more effective pain control, while improving quality of life and decreasing symptoms of depression, compared to their usual pain management regimen which may include opioid analgesics. Self-care interventions were identified as one or more of the following pain management treatments: physical therapy, transcutaneous electrical nerve stimulation (TENS) unit, yoga, strengthening exercises, acupuncture, aquatic therapy, and mindfulness. Pharmaceutical interventions such as non-steroid anti-inflammatory, non-benzodiazepine muscle relaxants, and topical analgesics were also considered as self-care interventions. Educating the ASPIRE Center patients on the side effects of long-term opioid use for chronic pain and on the benefits of self-care interventions was a significant part of this project. Veteran's at the ASPIRE Center also benefit from a host of other classes, such as Cognitive Process Therapy, Cognitive Behavior Therapy, anger management classes, yoga, mindfulness, and recreation therapy, all of which complement the self-care intervention used in this

project. Key to the success of this project was the interdisciplinary support from the ASPIRE Center management and clinical staff, all of whom contributed to the successful implementation of this project.

Evidence-Based Practice Intervention

The design of this project was modeled after a similar intervention performed in the outpatient clinics in the VA San Diego Healthcare System. This previous project used evidence-based interventions that reinforced the use of self-care management structured by the 5A's behavior counseling intervention. This model, used for behavior change, was widely recommended for tobacco cessation, and is composed of 5 tasks: Assess, Advise, Agree, Assist, and Arrange (Lawson, Flocke, & Casucci, 2009). Even though the 5A's was initially used as a tobacco cessation strategy, it also has been used as an intervention for other conditions such as chronic pain (Whitlock, Orleans, Pender, & Allan, 2002). The 5A's behavior change model was used in this project as described: (a) assess for Veterans' readiness to utilize self-care interventions, and assess pain level by using the numeric pain scale of 0/10 – 10/10, assess quality of life by using the American Chronic Pain Association quality of life scale 0-10, and assess depression level by using PHQ – 9 questionnaire assessment tool; (b) advise Veterans of the negative outcomes of being on long term opioid treatment for chronic pain, and advise Veterans on the benefits of utilizing self-care for chronic pain management; (c) agree on a realistic goal, realistic tolerable level of pain, realistic level for quality of life, and an acceptable improvement in depression level for Veterans who consent to participate; (d) assist in identifying and addressing barriers, provide resources, assist in providing consults for alternative treatment such as acupuncture, aquatic therapy, physical therapy, mindfulness,

and TENS unit; (e) arrange for appointments in specialty clinics, arrange for issue of prosthetics items. The 5A's model was conducted on the participant's first clinic visit and for every subsequent monthly follow-up visits for assessment of chronic pain, quality of life and depression level, and evaluation of treatment efficacy. In addition, participants received nurse-based telephone calls using the 5A's construct in between monthly clinic visits to assess pain, quality of life, treatment progression, barriers, individualized personal action plan. Findings and recommendations from the telephone follow-up were communicated with the Veteran's primary care provider at the ASPIRE Center.

Evidence-Based Solutions

Review of literature was performed using multiple search engines: Medline, Cochrane, CINAHL, PubMed. The following Medical Subject Headings (MeSH) terminologies were used: chronic pain management, self-care model, acupuncture, physical therapy, alternative medicine, and mindfulness. The literature search yielded a total number of 53 articles. Articles used were at least 5 – 10 years old and demonstrated benefits from utilization of self-care interventions in chronic pain management such as chronic, back, neck, shoulders, knee pain and migraine. Five of these articles were selected to be used based on the hierarchy of evidence as described by Melnyk and Fineout-Overholt, (2015). The hierarchy of evidence, ranking 1 – 6, determines the strength of the evidence in the articles. Four of the articles ranked level 1 – systematic review or meta analysis, and one article ranked level II – randomized control trial.

A systematic review conducted by Vickers et al., (2012) found that acupuncture proves to be superior to both no acupuncture control and sham acupuncture, when it

comes to treatment of chronic pain such as non-specific musculoskeletal pain, chronic headache, osteoarthritis, and shoulder pain (1). According to the randomized controlled trial that investigated the effectiveness of acupuncture among patients with chronic low back pain, acupuncture can be an effective intervention and well tolerated treatment for chronic low back pain sufferers without major side effects (2) (Weiß, Quante, Xue, Muche, & Reuss-Borst, 2013). Another systematic review conducted by Bertozzi et al., (2013) showed that therapeutic exercises can provide good relief for individuals who suffer from chronic neck pain (1). A systematic review performed by Tan et al., (2007) indicated that selected complementary and alternative medicine interventions such as pulsed electromagnetic fields, therapeutic touch, reiki, qigong/qi therapy, chiropractic manipulation, massage therapy, craniosacral therapy, meditation, yoga, etc., provide different levels of efficacy. Therefore, a clinician needs to consider the pros and cons of the modality and tailor the treatment to the needs of the chronic pain sufferer (1). Khusid and Vythilingam (2016), discuss the benefits of various mindfulness-based interventions (MBIs) that can be used to address chronic pain (1).

Behavioral health interventions, such as the 5A's, have been demonstrated to be effective to aide self-management in a variety of chronic medical conditions (Goldstein, Whitlock, & DePue, 2004). Specifically, motivational interviewing interventions, such as the 5A's, has been shown to be effective for short term adherence of chronic pain treatments (Alperstein & Sharpe, 2016). Through the biopsychosocial model it is understood that pain is a product of biological, psychological, and social processes (Engel, 1977). The 5A's provides an approach to conducting a brief interview addressing all of the biopsychosocial elements, which can motivate a patient to embrace self-care,

with a focus on managing chronic pain as an illness instead of looking at chronic pain as a disease to be cured (Roditi & Roditi, 2011). This approach is particularly important when addressing chronic pain among those who have PTSD, for they have poor pain-related functioning and may benefit through multimodal pain management approaches (Morasco et al., 2013). Collaborative care in the form of telephonic follow-up has been found to improve pain outcomes in a variety of settings. Dobscha et al., found modest but statistically significant improvement of pain symptoms over their 12-month intervention where a psychologist was making the phone calls (2009). In the SCOPE study, Kroenke et al. had positive improvement in pain using a stepped care approach with a physician, and automated symptom monitoring tool, with telephone follow-ups from a nurse care manager (2014). In the ESCAPE study, Bair et al. found that young Veterans benefited from the telephonic interventions provided by nurse care managers, in addition to combined analgesia, self-care management strategies, and cognitive based therapy (2015). All of these studies demonstrated modest improvement in pain, which is not uncommon with behavior change interventions (Whitlock, Orleans, Pender, & Allan, 2002). It should be noted that there is no report of harm associated with behavior change interviewing (Rubak, Sandbæk, Lauritzen, & Christensen, 2005).

Project Plan Process

Through collaboration with the preceding project's architects, and guided by use of the Iowa Model, an effort was made to translate the success of the outpatient intervention construct into use at the ASPIRE Center. Approval to implement the project was granted by the VA's Institutional Review Board (IRB) in May of 2017, immediately followed by the University of San Diego's IRB approval. With the support of the ASPIRE Center

Director, the project started in June of 2017. This project was integrated into the standard of care at the ASPIRE Center, and before each encounter the Veterans always provided verbal consent to discuss their self-care management of chronic pain. This project was conducted for five months, and ended in October of 2017. Data collected were recorded and entered into an excel spreadsheet for organization. No personal information was used that could identify Veterans who participated in the project. Identifiers were displayed as numbers. Data collection and analysis were completed in November of 2017.

Evaluation & Results

A total of 38 Veterans participated over the five-month intervention, each with a variable frequency of contact (Table 1). The means of each measure were tracked by cohorts who continued to participate through each cycle of office visit and telephone follow-up. Pain trends showed overall positive effect but results were variable cycle to cycle with R^2 scores of: 0.1882, 0.1667, and 0.0369 (Figure 1). Quality of Life trends also showed slight improvements, with some variability between cycles shown by R^2 scores of: 0.893, 0.0505, and 0.0015 (Figure 2). PHQ-9 scale showed a mostly negative effect in depression symptoms, and had the most variability with R^2 scores of: 1.0, 0.1967, 0.6498 (Figure 3).

Discussions

As expected, treating Veterans with chronic pain and PTSD is challenging. Chronic pain and Quality of Life showed modest improvements, which are likely attributed to the considerable resources at the ASPIRE Center that support self-care management. High drop-out rates were observed as a result of irregular or unplanned

discharges caused by multiple confounding factors, i.e. financial strain, family relationship difficulties, substance relapses, decompensating coping skills, etc., which may all have been pre-existing factors contributing to their admission in a residential rehabilitation treatment program. The increase in depression symptoms as shown in Figure 3, could also be a direct result of more intense mental health therapy or other factors such the stress of anticipated discharge from the ASPIRE Center.

Costs for this project were minimal, for the intervention was already standard of care and part of daily clinic workflow. The additional time that was required to complete this project occurred via the increased tempo of inter-clinic telephone calls, which never exceeded 20 minutes and occurred only as a follow-up to an office visit. Additional material costs were negligible, for the printed forms and educational diagrams were limited to five printed pages per Veteran.

While there is no way to measure the lifelong benefit of self-reliance and healthy coping techniques, there were also several unexpected benefits found during the project. For example, on multiple occasions during telephone calls, and review of the Veterans pending consults, it was found that they were unaware of forthcoming appointments and arrangements were made to ensure there would be no loss from a no-show. Furthermore, Veterans were made aware of treatments and resources that was available to them, but not currently using, and barriers were explored and solutions were provided, thus not only optimizing the Veterans treatments, but also increasing the value of the VA's resources.

Conclusions / Clinical Implications

With the dangers of opioid epidemic in the country, it is imperative that medical providers assist patients in managing their chronic pain with non-opioid interventions. Through shared decision making and goal directed behavioral counseling, Veterans were able to decide on their own self-care modalities, giving them a sense of empowerment over their own chronic pain. Contrary to the mediocre statistical results, when surveyed post hoc, an astounding 97% of the Veterans agreed that the collaborative approach utilizing self-care and motivational interviewing was cumulatively beneficial.

This project is sustainable, for the VA already recognizes that self-care management is a foundational aspect of chronic pain treatment; however, there are some limitations to consider. A design limitation of this intervention is the reliance upon telephonic follow-up communication, for Veterans were often unavailable to talk either from scheduling conflicts or other various technologic limitations, which often delayed or prohibited timely follow-up encounters. Another limitation is the unpredictability of patients' clinic follow-up. Many of the veterans did follow up monthly as scheduled but there are few who did not return to the clinic until their pain was exacerbated; this would have called for an intervention other than self-care. While the resource intensive environment of the ASPIRE Center contributed to the success of the intervention, the lack of accessibility to these resources would limit the ability to translate these results to similar populations elsewhere. As a result of the frequent attrition of intervention participants, the statistical power of these results were limited.

To fully engage this population of veterans with PTSD and chronic pain, it is important to initiate a frequent and ongoing conversation with the Veterans to not only

customize their chronic pain treatment but to also assist them through any barriers in their progress. Future research should identify and explore the self-management barriers that are unique to this population. Other opportunities for furthering the engagement of Veterans in their self-management include leveraging technology to the communication preferences of these younger Veterans. While it is difficult to treat chronic pain amongst this population, this project reinforces how a collaborative systems approach is needed to optimally address the Veterans' pain from a biopsychosocial perspective.

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APPENDIX

Tables

Table 1

Visit Averages

Visit	Clinic Visits	Tele Visits	Retained	Interval (Days)	Clinic Pain	Tele Pain	Clinic QoL	Tele QoL	Clinic PHQ- 9
# 1	38	19	50%	20.3	5	4.6	5.6	6.4	13.9
# 2	24	14	58.3%	21.7	4.8	5.2	6.4	6.8	12.2
# 3	12	7	58.3%	15.9	4.9	4.7	5.8	5.8	14
# 4	5	2	40%	26.5	5	4.5	6.6	6	14.25
# 5	2	2	100%	15	5.5	7	4	3.5	23.5

Note: Pain was scored using the Pain Numeric Rating Scale. Quality of Life (QoL) was scored using American Chronic Pain Association Quality of Life Scale. Depression was only measured during clinic visits using the Patient Health Questionnaire-9 (PHQ-9).

Pain Trends:

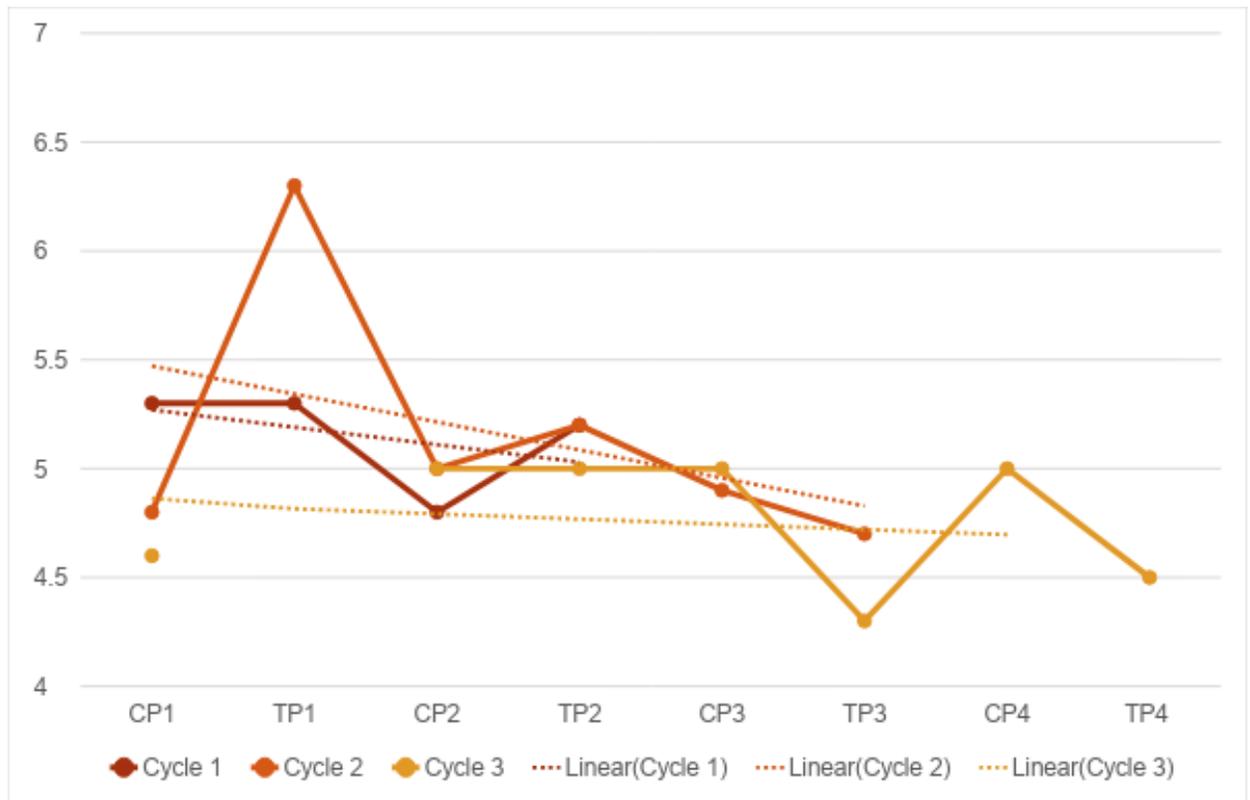


Figure 1. The Pain Numeric Rating Scale was measured at every clinic and telephone encounter. Cycle averages reflect scores of participants who were retained through one, two, or three “cycles” of clinic and telephone encounters.

Quality of Life Trends:



Figure 2. The American Chronic Pain Association Quality of Life Scale was measured during clinic and telephone visits. Cycle averages reflect scores of participants who were retained through one, two, or three “cycles” of clinic and telephone encounters.

PHQ-9 Trends:

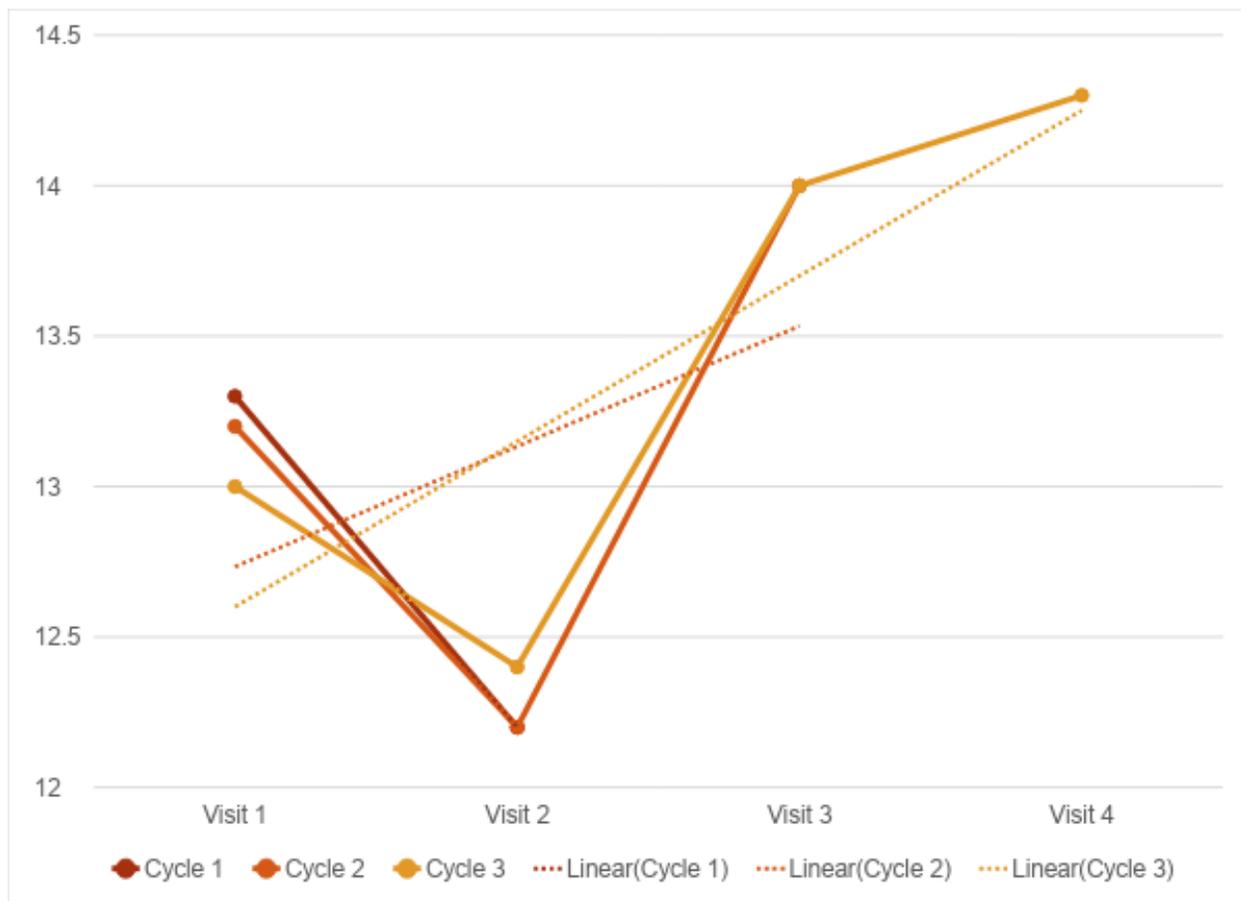


Figure 3. The Patient Health Questionnaire-9 (PHQ-9) was only used during office visits. Cycle averages reflect scores of participants who were retained through one, two, or three “cycles” of clinic encounters.

