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Incorporating Complementary and Alternative Medicine (CAM) Therapies to Expand Psychological Services to Veterans Suffering From Chronic Pain

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This article describes how psychological services for Veterans being seen in an interdisciplinary pain management program were expanded to include Complementary and Alternative Medicine (CAM) approaches. The benefits observed following the introduction of CAM therapies included: improved attendance and Veterans' involvement in group-based therapies, reductions in self-reported pain and anxiety, improved sleep, and an increased sense of emotional well being in the participants. The data also show that CAM therapies, when offered as a treatment option in the format of a drop-in group clinic, were associated with a modest but significant average pain reduction of 1.02 units on a 0–10 Numerical Rating scale. The CAM therapies described in this program are relatively inexpensive and portable, and can appear to the patient as conventional Western or "real" medical treatment (and perhaps, therefore, have less stigma than psychotherapy) for pain and associated distress. They also require minimal training to use and, therefore, can be used as a self-treatment at home. If proven to be effective in future controlled trials, their use could improve access to effective pain care, particularly for Veterans residing in the rural settings.

Keywords: expanding psychological services to veterans, Complementary Alternative Medicine (CAM), chronic pain management, cranial electrotherapy stimulation (CES), stress erasers

According to the U.S. Census Bureau (2007), ~56 million American adults experience some form of chronic pain that can include low back pain, arthritis, migraine pain, jaw and lower facial pain, and various forms of neuropathic pain. Pain has been shown to account for 80% of all physician visits and has been reported to cost over $70 billion annually in health care costs and loss of productivity (Turk & Okifuji, 1998). In a recent study on pain prevalence among Veterans of Operation Enduring Freedom and Iraqi Freedom (OEF/OIF), 43% of those assessed reported some kind of pain, with 63% of those with pain reporting moderate to severe pain intensities, and over 20% of those with pain reporting a pain duration of over 3 months (Haskell et al., 2009).

Several medical specialties have traditionally been involved in the assessment and treatment of pain. Primary care physicians are usually the first to assess and treat pain, and treatment at this point is usually limited to medication prescription. Based on response to treatment, patients might then be referred to various medical

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specialties. For instance, a referral might be made to surgery when surgical interventions are thought to be needed. A neurology referral might be made for headaches or refractory neuropathic pain. A psychiatry or psychology referral may be made for those with significant depression or anxiety, or when emotional factors are thought to make a significant contribution to pain. Usually, only when all biomedical treatments fail, are patients referred to a specialty pain management program; and even then they would be referred only when such programs are available.

The most common first-line treatments for pain have traditionally been analgesics, which include opioids, NSAIDS (nonsteroidal anti-inflammatory drugs), antiepileptic drugs, and tricyclic antidepressants for neuropathic pain, and more recently, a new generation of antidepressants that target the inhibition of norepinephrine reuptake. Although Western medicine has a good track record for treating acute pain, the treatment of chronic pain has been much less successful, perhaps in part due that fact that analgesics rarely address the critical factors that contribute to chronic pain (Turk, 2002). For example, recent findings suggest the possibility that long term use of opioids may lead to opioid-induced hyperalgesia (Angst & Clark, 2006). Pharmacotherapy has other limitations that include, for some drug classes such as opioids, increased tolerance, and severe undesirable side and toxic effects. Moreover, some patients are at risk for addiction to opioids.

It is also widely known that analgesics rarely, if ever, cure or eliminate pain completely; there is no such thing as a "pain killer." Turk, Loeser, and Monarch (2002) have noted that the average pain reduction for patients placed on long-term opioids is only 32%. Furthermore, anticonvulsants, tricyclic antidepressants, and topical preparations (considered the treatment of choice for neuropathic pain) seldom result in pain reductions below a rating of 4 on 0 to 10 numerical scales. Turk et al. (2002) concluded that ". . . none of the currently available treatments eliminates pain for the majority of patients" (p. 355). Thus, despite the availability of multiple biomedical treatments for chronic pain, there remains ample room for additional, and perhaps for some patients, even more efficacious treatments, providing a strong need for an alternative integrative pain care paradigm.

Over the last two decades, psychological approaches to chronic pain management have garnered significant empirical support (Kröner-Herwig, 2009; Somers, Keefe, Godiwala, & Hoyler, 2009; Turk & Okifuji, 1998). Psychological interventions are less invasive than traditional biomedical treatments. The targets of psychological interventions have traditionally been cognitions, emotions, and/or behavior. More recently, in the context of pain management, psychological interventions have been conceptualized as having direct effects on pain-related neurophysiological processes, which underlie the observed changes in symptoms (Jensen, in press).

Cognitive–behavioral therapy (CBT) is perhaps the most commonly used (and empirically supported) psychological treatment for pain (e.g., Keefe, Abernethy, & Campbell, 2005; Morley, Eccleston, & Williams, 1999). However, like more traditional biomedical-focused pain treatments, CBT and other psychological interventions are not universally effective (McCracken & Turk, 2002). Furthermore, the available psychological interventions are not without limitations. First, to be successful, they usually require significant effort and motivation on the part of the patient (Jensen, Nielson, & Kerns, 2003). Psychological treatments also tend to be time-intensive (10 or more 1-hr individual or group sessions is not unusual), and they often require significant practice of the cognitive and behavioral management skills outside of the treatment sessions. In addition, some patients with chronic pain are so wedded to the traditional biomedical model, where treatments are done "to" them and not by them, that they have little interest in treatments that require significant individual effort. Patients who desire a biomedical-focused treatment may not want to participate or follow through with psychologically based therapies such as CBT.

Over the last few decades, Complementary and Alternative Medicine (CAM) approaches have been increasing in popularity due in part to dissatisfaction with traditional Western medicine. CAM can be defined as a ". . . diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, satisfying a demand not met by orthodoxy, or diversifying the conceptual frameworks of medicine" (Ernst, 2000, p. 252). According to the National Center for Comple-

mentary and Alternative Medicine, CAM includes ". . . treatments and health care practices not taught widely in medical schools, not generally used in hospitals, and not usually reimbursed by medical insurance companies" (Arnold, 1999). CAM encompasses nontraditional treatments used in association with conventional Western medical practices as well as alternative medical interventions intended to replace traditional Western medical practices (Chiappeli, Prolo, & Cajulis, 2005).

The National Center for Complementary and Alternative Medicine (NCCAM) has grouped CAM therapies into 5 domains: Biologically based Medicine, Energy Medicine, Manipulative and Body-Based Medicine, Mind-Body Medicine, and Whole or Professionalized CAM Practices. Perhaps the CAM domains most closely related to psychological interventions are Mind-Body Medicine and Energy Medicine. Using the American Psychological Association (APA) guidelines for efficacy (Chambless & Hollon, 1998), Tan et al. (2007) recently examined various CAM therapies for chronic pain. Table 1 presents a summary of current findings regarding the efficacy of Energy Medicine and Mind-body Medicine for pain management.

The Michael E. DeBakey Veterans Affairs Medical Center Pain Management Program

The Michael E. DeBakey Veterans Affrairs Medical Center (MEDVAMC) pain management program is an anesthesiology-based multidisciplinary program that serves a tertiary teaching hospital. The psychologist and trainees in the program are involved primarily in outpatient care, providing a variety of individual and group psychological services including cognitive–behavioral therapy (CBT) and other forms of psychotherapy, pain support groups, pain education, and coping skills training groups. Re-

Table 1
Efficacy of Various CAM Therapies for Chronic Pain

Modality	Level of efficacy	Explanation
Energy medicine		
Pulsed electromagnetic fields	2–3	Level 3: Migraines and knee osteoarthritis. Level 2: Osteoarthritis of cervical spine.
Therapeutic touch	2	Promising for chronic musculoskeletal pain and pain related to knee osteoarthritis; less support for fibromyalgia or degenerative arthritis. Studies have several methodological weaknesses.
Reiki	1	Only 1 controlled study showed modest reductions in cancer pain.
Qigong	2–3	Level 3: Mixed chronic pain; findings need replication in independent research group. Level 2: Complex Regional Pain Syndrome Type I.
Cranial electrotherapy stimulation	2	Level 2: Dental anesthesia, spinal cord injury, and fibromyalgia pain.
Mind-body medicine		
Meditation	3	Meditation demonstrated improvement from baseline in numerous studies and reviews, including randomized controlled trials. Samples were small and restricted.
Hypnosis	4–5	Hypnotic analgesia treatments are more effective than no treatment. However, hypnosis is not more effective than other treatments that include hypnotic-like suggestions (e.g., relaxation training).
Yoga	3	Randomized controlled trials showed benefit for low back pain. Studies in carpal tunnel and osteoarthritis used within group comparisons. All samples predominantly female.
Biofeedback	2–4	Level 4: Migraine, tension headaches, and muscle-related orofacial pain. Level 3: Stress and muscle tension-related incontinence, cramping, and burning phantom pain, irritable bowel syndrome, Reynaud's, posture-related pain, stress-induced chest pain. Level 2: Premenstrual syndrome and dysmenorrhea, pain from spastic muscles and muscle spasms, pelvic-floor pain, carpel tunnel syndrome, myofascial/trigger point-related pain, fibromyalgia.

Note. Criteria for classifying efficacy were derived from the APA Guidelines of Clinical Psychology Division (Chambless & Hollon, 1998). Reprinted from Tan et al. (2007) with permission from *Journal of Rehabilitation Research & Development*.

ferrals to the program typically comes from two major sources:

1. First, a majority of all new referrals to the Anesthesiology-based pain program are routinely scheduled to attend an initial pain orientation/education classes (conducted by the psychologist) before or concurrent with their initial evaluation appointment with the anesthesiologists. About 20 to 30 new patients per week are scheduled for these classes, with an estimated 70 to 80% show rate.

Typically, these classes are intended to be both educational and motivational, with a goal of encouraging the patients to adopt a self-management perspective to pain and pain management. Topics covered include differentiating acute from chronic pain by introducing the notions that acute pain is a warning signal necessary for survival while chronic pain is likened to an alarm system going awry, and that chronic pain is not necessarily the result of tissue damage. The meeting is structured to educate patients about chronic pain by questioning and (hopefully) debunking a purely biomedical focus, and introducing the notion that decreasing pain interference and mind and body reconditioning can contribute to decreased pain and increased overall quality of life. By conceptualizing pain management as "brain" management and self-management, alternative interventions such as cranial electrotherapy stimulation (CES), and self-hypnosis training, as well as cognitive-restructuring and "acceptance" based interventions are introduced.

At the end of the session, all Veterans are given a list of group services (support, education, coping skills training, and CAM modality groups) and the times available for which they could attend these groups with or without appointments. The drop-in option is provided for the convenience of the Veterans, making it possible for them to attend the chosen sessions when they are at the MEDVAMC for other appointments. Veterans are also offered the option of requesting an individual psychological evaluation appointment on the same day as their initial educational session or on another day. Based on the results of the screening evaluation, an individual treatment plan is developed for each patient. This may include individual psychotherapy, group sessions, and/or other treatments. Based on a survey conducted in 2006, on average, 81% of patients attending this initial orientation/education class and screening expressed a desire to pursue CAM interventions. However, we did not collect data regarding the number of patients who actually showed up for follow-up CAM sessions.

2. A second source of referrals are the three Pain Center anesthesiologists who might see patients for (a) assessment for the suitability of long-term opioid maintenance or spinal cord and other implants; (b) treatment for distress and other comorbidities related to pain (e.g., depression, anxiety, and relationship conflicts); (c) evaluation for recommendations and treatment associated with suspected drug seeking or abuse or noncompliance with medical regimens; or (d) evaluation and intervention for patients who are unresponsive to pain medications, nerve blocks, and other traditional biomedical interventions. An average of 6 to 8 new patients per week is referred by the anesthesiologists for one or more of these 4 reasons.

Among the limitations observed over the years in the behavioral pain management program was a consistently high rate of no-shows for the initial psychological appointment or limited patient follow-through after the initial appointment. When queried informally, a significant subset of the patients stated what they wanted was "pain relief" and did not view psychological therapies as providing such relief or otherwise being relevant to their pain reduction. A second limitation was related to the nature and characteristics of the patient population. Many of the patients had to travel long distances (60 to 150 miles) to reach the MEDVAMC, and had limited resources that would allow them to get to the center. To serve their needs, any interventions offered would ideally provide relatively fast pain relief. A third factor was the severity of the pain conditions in the Veteran patient population, which made pain relief a primary goal for many. Pain relief has not been a primary focus of CBT and other psychotherapies that tend to focus on improvement in function or "acceptance" of pain (McCracken, 2002) rather than pain relief as a treatment

target. Finally, many of the Veterans with chronic pain considered their pain as primarily a physical problem, and they wanted a "real" physically focused treatment. These factors led to the consideration of incorporating CAM treatment approaches into the program since many of these resemble physical treatment and could provide fast pain relief (these modalities will be discussed later in the manuscript). Moreover, to the extent that the Veterans might find CAM therapies to be helpful, and given that a psychologist would be providing them, it seemed possible that having CAM therapies as an option might encourage at least some of the Veterans to consider other psychological pain treatments as well, including CBT.

For this project, five specific CAM modalities, described below, were selected in the effort to expand the behavioral/alternative pain management services at MEDVAMC. The impetus has evolved from many years of practice at this VA showing that while those who choose to participate in the traditional psychological services are able to benefit from them, the penetration rate has been relatively low, and the overall results somewhat disappointing, partly because of the low attendance rates among patients participating in these services. Among other factors, most of the Veterans were expecting or hoping for immediate pain relief and did not view psychological interventions as relevant or able to provide the pain relief they were seeking.

Furthermore, many Veterans may be resistant to the idea of seeking out such interventions because seeing a psychologist could be equated with the admission that their pain is "all in their head," and therefore, not "real." In contrast, the five modalities selected, based on initial clinical experiences, were in many cases able to provide immediate pain and other symptom relief. Additionally, because each of these involves electronic gadgetry, they might also be viewed by the patient as being more analogous to medical or physical treatments. Each of the modalities offered is described below.

Cranial Electrotherapy Stimulation (*CES*) involves "the application of a small amount of current, usually less than one milli-ampere, through the head via earclip electrodes" (Kirsch & Smith, 2000, p. 85). The CES device used is called "Alpha-Stim" (AS) and has been approved by the U.S. Food and Drug Administration (FDA) as a treatment for depression, anxiety, and insomnia (Lichtbroun, Raicer, & Smith, 2001). A small, but growing, body of controlled studies has reported on the efficacy of CES in reducing pain in patients with fibromyalgia, tension headaches, spinal pain, dental pain, and unspecified chronic pain (Kirsch & Smith, 2000; Lichtbroun et al., 2001). For example, a double-blind, placebo-controlled study, in which 60 patients with fibromyalgia were randomly assigned to 3 weeks of 1-hr-daily CES treatments, sham CES treatments, or a wait-list control condition showed that treated patients reported more improvements in pain, sleep, well-being, and quality of life than patients treated with sham CES (Lichtbroun et al., 2001). In another double-blind study, in which 50 dental patients were randomly assigned to receive real ($n = 30$) versus sham ($n = 20$) CES, 24 of the 30 patients (80%) who received CES were able to undergo dental procedures without any other anesthesia, while 15 of the 20 (75%) sham CES patients requested anesthesia (Clark et al., 1987).

In a recently completed a double-blind placebo controlled pilot study of AS for the treatment of central neuropathic pain (below the level of injury) associated with spinal cord injury, Tan, Rintala, Thornby, Yang, Wade, and Vasilev (2006) found significant pre- to post-session reductions in pain intensity that was greater for the active CES treatment ($n = 18$) than the sham CES treatment ($n = 20$). More recently, Tan and colleagues (2009) reported on the outcome of a multisite clinical trial involving 105 individuals suffering neuropathic pain below the level of injury among persons with spinal cord injury and concluded that ". . . CES treatment resulted in significant pain reduction. Although the pain reduction does not meet the clinically meaningful criterion of 30% or more, the effect size is large (0.73). Considering other advantages such as low cost, portability, ease of administration, and little or no side effect, CES treatment should be considered and made available to health care professionals as an adjunctive treatment for neuropathic pain below the level of injury among persons with SCI" (Tan et al., 2009, abstract).

Biofeedback is the process of providing real-time information from psycho-physiological recordings about the levels at which physiological systems are functioning. Electronic biofeedback

devices are designed to objectively and noninvasively record tiny changes in physiological functions that could not be detected readily by other means. The physiological parameters most often recorded for biofeedback include: muscle tension via electromyogram—sEMG; near surface blood flow (by recording skin temperature); heart rate variability–HRV; sweating or galvanic skin response (GSR; Schwartz & Andrasik, 2003); and brain waves via electroencephalogram–EEG (e.g., Laibow, 1999; deCharms et al., 2005; Flor, 2002; Kropp, Siniatchkin, & Gerber, 2002). The efficacy of biofeedback has been established for some modalities more than others. For a review of the empirical support on biofeedback for the treatment of pain, the reader is referred to Tan, Sherman, and Shanti (2003), Tan et al. (2007), and Sherman (2003).

Three biofeedback-based modalities were offered to patients during this project: Stress Eraser EmWave, and Respirate. The *Stress Eraser* (SE) is a portable biofeedback device that easily can be used by Veterans at home for the purpose of increasing heart rate variability (HRV). HRV biofeedback has been shown to be effective for reducing the symptoms of PTSD (e.g., Tan et al., 2009; Zucker, Samuelson, Meunch, Greenberg, & Gevirtz, 2009), and for persistent pain associated with fibromyalgia (Hassett et al., 2007). The SE increases HRV by training the user to breathe at his or her own resonant frequency with the aid of visual and auditory feedback provided by the device.

The *EmWave* (EW) is a portable biofeedback device that computes the heart rhythm patterns for the user. A small sensor is clipped onto the ear lobe. Then, the user is provided with 3-step instructions: (a) to focus in the area of his or her heart; (b) to pretend that breath is flowing in and out through that area; and (c) to find a comfortable breathing rhythm with the help of a pacer signal that goes up and down the device to help the user pace his or her breathing. The user is then instructed to recall a positive experience or attitude. The EW computes coherence, which reflects parasympathetic versus sympathetic nervous system activity, by detecting each pulse and computing the time interval between each consecutive heartbeat. Although EW has not been formally researched in terms of its efficacy for chronic pain management, heart rhythm coherence (the degree to which one's breathing, sense of emotional well-being, and heart rate are synchronized) has been shown to improve symptoms such as depression, anxiety, panic disorder, and PTSD symptoms (McCraty, Atkinson, Tomasino, & Stuppy, 2001).

The *Respirate* (RR) is a portable medical device that interactively guides the user toward slow and regular breathing by synchronizing respiration to musical tones and in the process helps to regulate blood pressure. A recent double-blind controlled study has demonstrated its efficacy in significantly lowering both systolic and diastolic blood pressure among type II diabetics (Schein et al., 2009); however, this device has not been formally tested for chronic pain management.

The *Audio-Visual Stimulation* (AVS) is not a biofeedback device. Rather, it provides the user with flashing lights and pulsing tones with a goal of entraining electroencephalographic (EEG) signals at specific frequencies to achieve desired therapeutic effects. The device used in this study was the "David Pal." The David Pal is a specially developed portable device consisting of a pair of eye goggles and ear phones that are hooked up to a small "control box" on the one end and the user at another. An operator's manual provides different programs that can be selected by the therapist to achieve certain effects such as "State Five Meditation" to quiet "hyper mind," or "Subdelta" to "calm the hypothalamus" (presumably beneficial for fibromyalgia and hypertension). A review of David Pal by Siever (2000) claimed that this technology has been successfully applied to a variety of conditions including chronic pain and fibromyalgia, with good results.

For this project, three specific hypotheses regarding the CAM modalities used during the review period were tested: (1) that CAM therapies would be accepted by Veterans in a pain management program and would be feasible to implement; (2) that adding CAM therapies to the program would improve attendance rates; and (3) that Veterans participating in CAM therapies would experience reduced pain intensity ratings and report improved quality of life.

Method

This is a retrospective study of a clinical program aimed at expanding psychological services for Veterans being seen in an interdisci-

plinary pain management program by incorporating selected CAM therapies. Because of the nature of a retrospective study, Hypothesis 1 was tested informally by observing the ease of recruitment (acceptability) and protocol implementation (feasibility). Hypothesis 2 was tested by comparing Pre-CAM group attendance in traditional therapy groups (support, education, and coping skills groups) for the 3 months before the introduction of the CAM modality trial groups with 3 months average attendance at the CAM modality clinics. During the CAM groups, 5 portable modalities were made available for the Veterans to try out for as many sessions as they found the treatments helpful. These devices included the AS, the SE, the EW, the RR, and the AVS. Hypothesis 3 was tested in terms of pain reduction and improved quality of life measures before and after the CAM treatment sessions.

Procedure

The patient flow from referral stage to the orientation/educational session was described above. As noted, Veterans referred to this program were given the choice of attending any group program with or without appointments. Like all other groups, the CAM group was offered three times a week at a set time. Those who showed up at the CAM group were provided with an explanation of pain management benefits of each of the 5 CAM devices, and offered their choice of device (AS, SE, EW, RR, and AVS). The participants were then asked to complete a pre- and postsession self-rating form on pain intensity (on a 0 to 10 numeric rating scale) and a "yes" or "no" response to "Progress (improvement) since last session" (on pain, anxiety, depression, sleep, and well being) and "Other benefits this session" (relaxation, mood, and well-being). The CAM sessions typically lasted an hour. The questions included in this form are listed in Table 2.

In addition, monthly administration of a set of four brief, standardized assessment tools was introduced during the CAM modality trials as a supplement to the session rating forms to assess and monitor progress on four outcome domains in addition to pain intensity: anxiety, depression, sleep quality, and sense of well-being. The measures used to assess these domains included the Patient Health Questionnaire Depression

Table 2
CAM Clinics Session Feedback Form

Date:				Pain clinic—CAM session feedback form								
					Progress (improvement) since last session (Y/N)					Other benefits this session		
Name	SSN	Presession NRS pain rating	Postsession NRS pain rating	Modality	Pain	Anxiety	Depression	Sleep	Well-being	Relaxation	Mood	Well-being
1					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
2					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
3					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
4					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
5					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
6					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
7					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
8					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
9					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
10					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
11					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
12					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Screener (PHQ-2; Kroenke, Spitzer, & Williams, 2003) for assessing depression, the Overall Anxiety Severity and Impairment Scale (OASIS; Norman, Cissell, Means-Christensen, & Stein, 2006) for assessing anxiety, the 6-item MOS Sleep Problem Index-I (SPI-I; Hays & Stewart, 1992) for assessing sleep quality, and the 5-item Mental Health Index (MHI-5; Berwick et al., 1991) for assessing sense of well-being. The psychometric properties of the instruments are briefly described below.

Outcome Measures

PHQ-2. The PHQ-2 (Kroenke et al., 2003) is a 2-item self-report measure that assesses the frequency of depressed mood and anhedonia over the past 2 weeks. Responses are made on a three point scale, ranging from 0 "not at all," to 3 "nearly every day." The construct and criterion validity of the PHQ-2 has been demonstrated in several large outpatient samples, as has its sensitivity and specificity for identifying depressive disorders. While designed as a screening tool, PHQ-2 change scores have been shown to accurately track improved, unchanged, and deteriorated conditions when compared with *DSM–IV* diagnoses as established with the SCID (Lowe, Kroenke & Grafe, 2005).

OASIS. The OASIS (Norman et al., 2006) is a brief 5-item self-report measure designed to assess the frequency, intensity, and impairment associated with a variety of anxiety disorders as well as with subthreshold symptomatology. The OASIS has demonstrated excellent test–retest reliability and convergent and discriminant validity in nonclinical (Norman et al., 2006) and clinical (Campbell-Sills et al., 2009) samples, as well as good internal consistency (.80 to .84).

MOS SPI-I. The Medical Outcomes Study Sleep Scale (Hays & Stewart, 1992) is a 12-item scale that asks the respondent to recall the quantity and quality of their sleep over the past month. It assesses a variety of sleep related constructs, including sleep disturbance, perceived sleep adequacy, daytime somnolence, snoring, awakening short of breath or with a headache, and quantity of sleep. A 6-item composite sleep problems scale (SPI-I) was used in the present study, and includes items that assess perceived sleep adequacy, shortness of breath, sleep disturbances, daytime somnolence, and perceived sleep adequacy dimensions. The SPI-I has been found to be a reliable and valid instrument, and has demonstrated internal consistency coefficients ranging from .75 to .86 in the general U.S. population (Hays & Stewart, 1992).

MHI-5. The MHI-5 (Berwick et al., 1991) is a 5-item self-report measure that assesses general mood or affect, including depression, anxiety, and positive well-being in the past month. The MHI-5 was derived from the 38-item Mental Health Inventory and is a component of many of the MOS family of instruments (e.g., the SF-36; Ware & Sherbourne, 1992). Sum scores are transformed to a 0–100 scale, with higher scores indicating better mental health. The MHI-5 is a well-validated and reliable measure of mental health status (Ware & Kosinski, 1999).

Data Analysis

To address the aforementioned hypotheses, the following data analyses were performed. Hypothesis 1, as previously stated, was tested informally by observing ease of recruitment, enrollment, and provision of services. Hypothesis 2 was tested using chi-square and unpaired *t* tests to evaluate group differences across demographics and group attendance rates for those attending Pre-CAM groups (3 months before implementation of CAM therapy) with those attending the CAM groups (3 months postimplementation of CAM therapy). Hypothesis 3 was tested by first compiling the "yes" and "no" responses from the participants who completed the feedback forms (see Table 2) assessing self-reported improvements in pain, anxiety, depression, sleep, and overall wellbeing before and after each CAM session. Then, scores on the measures of these domains, previously described, were statistically compared for changes across the 3 month period of the study.

Results

Demographics

Demographic variables of Veterans who attended traditional groups (pain education, pain support, and/or pain coping skills training) for 3 months before the introduction of CAM (Pre-CAM) were compared to those who attended the CAM groups. The Pre-CAM group attend-

ees had a mean age of 54.26 years ($SD = 16.16$), were 100% men, and were 65% White ($n = 11$). The CAM group had of a mean age of 51 years ($SD = 12.79$), were 82% men, and were 50% White ($n = 16$). Chi-square tests were performed on gender and ethnicity. For gender, the chi square test indicated no significant difference, $\chi^2(1, n = 49) = 3.63, p > .05$ (two-tailed) with $\varphi = .27$. A chi square test comparing White to non-Whites (i.e., African American, Hispanic, and Native American) indicated no significant difference $\chi^2(1, n = 49) = .97, p > .05$ (two-tailed), with $\varphi = .14$. In regards to age, unpaired t tests indicated no significant difference, $t(47) = .703, p > .05$ (two-tailed) with $d = .23$.

Attendance

Thirty-two Veterans participated during the review period, resulting in a total of 197 visits to one or more of the 32 CAM groups offered from 03–01-2009 to 05–22-2009. Among the 5 CAM portable devices made available to the Veterans (the option of switching devises between sessions was permitted), a majority opted for the AS (73%), followed by 11% for the SE, 6% for the EW, 6% for the RR, and 4% for the AVS. The average number of Veterans who attended each CAM group session was significantly higher than the average number attending Pre-CAM groups: CAM average 6.16 ($SD = 1.99$; range, 2 to 9); Pre-CAM average 2.97 ($SD = 1.49$; range, 1 to 7); [two-sample t *test*, $t(63) = -7.303, p < .001$].

Pain Reduction

As mentioned above, there were 32 sessions of CAM groups for this review period. A paired t test indicated an average decrease of 1.02 units ($SD = 1.10$) on the 0–10 Numerical Rating Scale of pain intensity during the study period, which was statistically significant $t(196) = -12.99, p < .001$, and represented a large effect size of .93. Table 3 shows a breakdown of the pain reduction across sessions.

Benefits Reported From Session Monitoring Forms

Veterans in were asked to check "yes" or "no" to "progress (improvement) in pain, anxiety, depression, sleep, and sense of well-being since the last session" as well as "yes" or "no" to "benefits of this session" in relaxation, mood, and well-being. Tables 4 and 5 present the number of patients who responded "yes" to the questions of "improvements since last session" in pain, anxiety, depression, sleep, and well-being. Note that a substantial number of Veterans who participated reported substantial "improvements since last session" especially in pain and sense of well-being (73 and 74%, respectively). Similarly, Table 5 summarizes

Table 3
Average Pain Reduction Across CAM Sessions

Number of sessions visited	Number of subjects	Average decrease in pain rating per session visited	Average % decrease in pain ratings per session visited
1	13	0.96	13.71
2	2	1.75	24.14
3	4	2.25	31.78
5	1	0.20	2.44
7	1	0.29	4.61
9	2	0.25	3.74
10	2	1.25	40.98
12	1	1.25	14.71
13	1	0.11	1.31
14	2	0.68	9.38
18	1	1.72	21.80
21	1	0.76	10.93
26	1	1.50	21.55
All Sessions	32	1.02	14.66

Table 4
Percentages of Patients Reporting "Yes" to Symptom Improvement Since Last CAM Session

N = Number of patient responses	Reported improvement in pain since last session	Reported improvement in anxiety since last session	Reported improvement in depression since last session	Reported improvement in sleep since last session	Reported improvement in well-being since last session
158	73%	61%	48%	54%	74%

self-reported improvements at the end of each session. Note that the "yes" responses were quite substantial (83% for relaxation, 77% for mood, and 80% for well-being postsession).

Changes in Standardized Measures of Patient Functioning

Monthly administration of a set of four brief, standardized assessment tools was used as a supplement to the session rating forms to assess and monitor progress on four outcome domains in addition to pain intensity: anxiety, depression, sleep quality, and sense of well being. Statistical analysis was performed using SPSS version 17.0. The results of the *t* tests examining changes in these additional outcome measures are shown in Table 6. Although the change scores were not statistically significant, perhaps because of the low sample size, the effect sizes for improvements in well-being, sleep, anxiety, and depression were promising (1.54, 0.73, 0.44, and 0.37, respectively).

Discussion

Outcome With Respect to the 3 Hypotheses Tested

Hypothesis 1 stated that CAM therapies would be acceptable to Veterans and feasible for clinicians to implement in a pain management program. This hypothesis was supported by results of informal retrospective review by clinicians of the ease of recruiting and enrollment (acceptability to Veterans), and ease of incorporating CAM therapies into the existing pain management program (feasibility). There was little or no obstacle in implementing such a program. CAM therapies were well-accepted based on the ease of recruitment, and preference for such treatment often expressed by many Veterans suffering from chronic pain. The cost for acquiring the CAM devices used currently ranges from $145 for SE to $450 for AS, which is affordable for many programs, especially when considered in light of the costs of other medical equipment and devices. For example, a single nerve block injection for low back pain typically costs around $600.00, including facility and professional charges (Sanders, 2002).

Hypothesis 2 stated that adding CAM therapies to the program would improve attendance

Table 5
Percentages of Patients Reporting "Yes" to Symptom Improvement in Post-CAM Session

N = Number of patient responses	Reported improvement in relaxation posttreatment this session	Reported improvement in mood posttreatment this session	Reported improvement in well-being posttreatment this session
158	83%	77%	80%

rates. This hypothesis was also supported. The average CAM group attendance per session was shown to be significantly higher than the average group attendance per session during the 3 months Pre-CAM period (6.20 vs. 2.97 participants per group, respectively).

Hypothesis 3, which states that adding CAM therapies reduces pain intensity ratings and improves quality of life among participants, also received preliminary support by the findings. Along with acceptability, results indicate that the CAM therapies used in the MEDVAMC program show promising levels of efficacy as an alternative or additional treatment modality in a group setting. For example, the reduction in reported pain intensity among the CAM participants as a group was modest but statistically significant, with a Cohen's *d* of .93.

In addition to pain reduction, Veterans who participated in the CAM therapies also reported improvements in a number of quality of life measures. Specifically, the Veterans reported an average improvement (at the end of each session) as follows: 83% for "relaxation," 77% for "mood," and 80% for "well being." When asked to rate "improvement since last session" of treatment across a variety of symptoms, a sizable portion of the participants answered "yes," especially with respect to pain and sense of well being (73 and 74%, respectively). When standardized assessment tools were used as a supplement to the session rating forms to examine differences in scores between assessment periods 1 and 3 (roughly 2 months apart), the results indicated that, although the change scores were not statistically significant, the effect sizes for improvements in well-being, sleep, anxiety, and depression were promising (1.54, 0.73, 0.44, and 0.37, respectively). Clearly, the Veterans who received the CAM treatments felt that these treatments were beneficial and helpful.

Limitations

This paper reports the development of an innovative clinical intervention program; however, there are a number of limitations to the study, which limit the conclusions that can be drawn.

1. The fact that it was a retrospective study and that it was not a formal research project (no control condition was used) indicates a need for caution in interpreting the results and generalizing the findings to other settings. Follow-up experimental studies are needed to confirm and validate the findings and conclusions.

2. The pain reduction reported by Veterans were only before and after each treatment session, thus, any long lasting benefits were not assessed.

3. Because the amount or type of concurrent treatment was not controlled for in

Table 6
Paired–Sample t-Tests Comparing Time Point 1 (TP1) and Time Point 3 (TP3)

Outcome measures	Mean difference	*t*-value	*df*	*p* value	Effect size
TP1-TP3					
PHQ-2 (depression)	−.286	−.367	6	.726	.367
MHI (emotional well being)	−1.27	−1.54	6	.175	1.54
OASIS (anxiety)	.857	.542	6	.607	.443
MOS (sleep)	1.71	.891	6	.407	.727

Note. P1 = Before Treatment; P3 = After Treatment. Cohen's *d* was computed for effect size.

this retrospective study, it is not possible to know if the improvement in pain ratings was because of the CAM therapies, the concurrent treatment provided, regression to the mean, or a combination of these.

4. The current analysis does not allow differentiating the relative cost-benefits of the CAM devices. Although AS and the other devices are both considered portable CAM treatment, they differ in that the former does not require active user participation while the others require that the users to be actively engaged while undergoing the treatment. Specifically, the patient has to learn a new skill such as breathing in certain manner to receive benefits. Our data showed that when given the choice, most Veterans who attended the CAM clinics chose to use AS (73%), the more passive device. When asked, "Feeling relaxed, improved sleep and a sense of well-being" while using the device was among the most common explanations provided. In terms of efficacy for pain reduction, there are insufficient data to compare the various modalities.

Clinical Implications

Despite the study's limitations, the findings of this study suggest that psychological services in a pain management program could be expanded by incorporating CAM therapies. In addition to the ease of incorporation, acceptability to Veterans, and increased attendance per session and participation, the CAM therapies included in this study appear to show promising level of efficacy in terms of pain reduction and improved quality of life. For a more extensive discussion on the topic of incorporating CAM into traditional psychological services for pain management, the reader is referred to Tan and Jensen (2007) and Tan, Alvarez, and Jensen (2006).

The results also highlight the observation that CAM approaches used in this study appear to focus initially on symptom control and symptom reduction while many psychological interventions, such as CBT, focus more on psychological and physical function as the primary treatment targets (pain reduction tends to be viewed as a beneficial "side effect" of the treatment). However, one of the strengths of incorporating CAM therapies into a pain management program is that clinicians need not be limited to one or the other. In fact, by first effectively addressing symptoms using CAM therapies, many patients may become more interested in other psychological treatments that can improve mood and physical functioning. This has the potential to be a real strength of incorporating CAM treatments with other treatments such as CBT.

Implications for Pain self-Management and Increasing Access to Treatment

CAM therapies as presented in this study, either alone or in conjunction with other psychological therapies such as CBT, could potentially encourage and be used as an aid in a self-management approach to chronic pain management. Furthermore, the CAM devices used are relatively inexpensive, require minimal training to use, and can be self-administered at home by the Veterans without having to come into the VA. Given our observation that Veterans require very minimal instruction to use the devices, the CAM modalities could potentially be used to provide self-treatment at home, thereby increasing the accessibility of treatment to those residing in rural settings or where the cost of frequent traveling to the VA may be an obstacle. Unlike other psychological treatments, the CAM modalities we used are often perceived as more analogous to traditional Western medical treatments, and may have less stigma and more face validity to the Veterans suffering from chronic pain. This is important given that previous studies have shown that endorsement of male sex role norms could decrease participation in psychotherapy treatment (Stark, 1991). This is a particularly notable for the OEF/OIF Veterans who have shown very high no-show rates and avoidance of mental health treatment for which psychological services are identified as indicated. We have also observed the portable CAM devices such as AS and SE appeal to many OEF/OIF Veterans who have been raised on electronic gadgetry.

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