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Yoga for Veterans with Chronic Low-Back Pain

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Abstract

Objectives: Chronic back pain affects a large proportion of both the general population and of military veterans. Although numerous therapies exist for treating chronic back pain, they can be costly and tend to have limited effectiveness. Thus, demonstrating the efficacy and cost-effectiveness of additional treatment alternatives is important. The purpose of our study was to examine the benefits of a yoga intervention for Veterans Administration (VA) patients.
Subjects/intervention: VA patients with chronic back pain were referred by their primary care providers to a yoga program as part of clinical care. Before starting yoga, a VA physician trained in yoga evaluated each patient to ensure that they could participate safely.
Design: The research study consisted of completing a short battery of questionnaires at baseline and again 10 weeks later.
Outcome measures: Questionnaires included measures of pain, depression, energy/fatigue, health-related quality of life, and program satisfaction. Paired *t*-tests were used to compare baseline scores to those at the 10-week follow-up for the single group, pre–post design. Correlations were used to examine whether yoga attendance and home practice were associated with better outcomes.
Results: Baseline and follow-up data were available for 33 participants. Participants were VA patients with a mean age of 55 years. They were 21% female, 70% white, 52% married, 68% college graduates, and 44% were retired. Significant improvements were found for pain, depression, energy/fatigue, and the Short Form-12 Mental Health Scale. The number of yoga sessions attended and the frequency of home practice were associated with improved outcomes. Participants appeared highly satisfied with the yoga instructor and moderately satisfied with the ease of participation and health benefits of the yoga program.
Conclusions: Preliminary data suggest that a yoga intervention for VA patients with chronic back pain may improve the health of veterans. However, the limitations of a pre–post study design make conclusions tentative. A larger randomized, controlled trial of the yoga program is planned.

Introduction

Low back pain is a common health condition that may be even more prevalent among military veterans. Although data on low-back pain from veterans of current military conflicts are still forthcoming, 28–44% of U.S. Gulf War veterans reported low-back pain when assessed 2–5 years after service.[1] This is in contrast to rates of low-back pain of about 25% in the U.S. population at any one time,[2] even though the veterans being studied are younger on average than the U.S. population. Similar data have been found for military veterans from the United Kingdom,[3] and even higher rates were found in troops from France,[4] with rates increasing with longer-term follow-up and in those veterans deployed in combat zones.[5] In a study of Veterans Administration (VA) patients, veterans of various military conflicts who had

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no history of major back problems and no low-back pain in the previous 4 months were followed prospectively for 3 years.[6] Results showed that 67% of these patients reported low-back pain during the 3-year study.

Although many acute cases of low-back pain resolve on their own, up to one third of patients who seek treatment for initial low-back pain report persistent pain 1 year later[7] and 20% report ongoing activity limitations. In addition to the discomfort of pain that characterizes the condition of chronic low-back pain, those afflicted are at risk for increased disability,[8] increased presence of psychologic symptoms such as depression,[9,10] anxiety,[11,12] and reduced health-related quality of life (HRQOL).[13,14] Chronic low-back pain is also associated with increased health care costs.[15]

Most chronic low-back pain cases (85%) are nonspecific and cannot be linked to specific physical abnormalities.[16] The recommended treatment for nonspecific chronic low-back pain begins with medication management and self-care instruction,[17] but nonpharmacologic approaches are frequently added, especially since the long-term use of pain medications can have significant side-effects or disadvantages.[18,19] Among the various nonpharmacologic approaches, none stand out as the preferred treatment of choice. There is growing evidence that complementary and alternative therapies, such as yoga,[20–22] acupuncture,[23,24] and massage therapy[25] produce moderately large therapeutic effects on average. In addition, yoga has the benefit of costing considerably less per person treated because it can be easily administered in group format.[19]

Classical yoga is an ancient discipline developed as a part of traditional Indian medicine, philosophy, and religion and was first formally described by Patanjali around 200 BC.[26] It was designed to create balance, harmony of mind and body, and aid in achieving enlightenment. Although yoga is often misunderstood in the West as simple "stretching," the poses or postures (*asanas*) are only one of eight components of a larger philosophy of complete health and balance. Hatha yoga involves the practice of yoga postures together with energetic breathing exercises (*pranayama*), which is another of the eight components of classical yoga.[26] Most yoga practiced in Western cultures today can be considered Hatha yoga and often include elements of at least two other classical yoga components: mindfulness/meditation (*dhyana*) and/or concentration (*pratyhara*).[27] Thus, modern yoga practice typically consists of an instructor leading a group of practitioners through a series of specific postures while performing deep breathing exercises. In addition to demonstrating the correct posture for less experienced practitioners, the leader often suggests that practitioners focus their attention or concentrate on either their postural alignment, their breathing, or on the bodily sensations produced by various postures.

There are many different types of Hatha yoga (Ashtanga, Integral, Anusara, Kundalini, Viniyoga, Bikram, etc.) Some of the differences between types of yoga include rate at which students cycle through poses, a varying emphasis on alignment during poses, the extent to which deep or rhythmic breathing is emphasized, the extent to which concentration or attention is emphasized, where cognitive attention is directed, room temperature, and the overall intensity and difficulty of the poses. Although hundreds of postures and their variations have been developed, each is designed to stretch and strengthen particular areas of the body. Yoga is not only for the slim and flexible, as the use of props enables people of all ages and physical ability levels to perform the poses and achieve benefit.[27]

Since Hatha yoga usually consists of a combination of yoga postures, deep breathing, and cognitive exercise, there are a variety of possible mechanisms for the health benefits yoga may produce. It is fairly clear that the physical performance of yoga postures has been shown to result in increased musculoskeletal strength and flexibility.[28,29] Mechanisms by which yoga reduces symptoms such as fatigue, stress, depression, and anxiety are not understood as well, but research to date suggests that deep/rhythmic breathing promotes relaxation and cognitive strategies can improve mood and reduce anxiety.[30–34]

Yoga has been shown to be helpful for treating a variety of health problems including diabetes,[35] mental health issues,[36] cancer,[37]) and musculoskeletal pain.[29] However, the specific effects of yoga on low-back pain have not been well studied.[19,38] One pilot study with 22 patients found trends toward improved balance and flexibility, and decreased depression and disability, but the results were not statistically significant given the small sample size.[20] Two (2) recent randomized, controlled studies have found that yoga can reduce pain and functional limitation in people with chronic low-back pain.[21,22] The study by Williams et al.[22] randomized 42 individuals to either Iyengar yoga or an educational control group. The study found significantly greater reductions in pain, functional disability, and pain medication usage for the yoga group when compared to an educational control group. The study by Sherman[21] is the largest and most comprehensive study to date of the effects of yoga on chronic low-back pain. The study randomized 101 adults to one of the following: Viniyoga style yoga, an exercise intervention, or self-care literature, and found that the yoga group had better physical functioning than the other two groups at 12 weeks. At the 26-week follow-up, the yoga group had significantly fewer symptoms and better back-related function than the self-care book group. The yoga group had more improvement than the exercise group at 26 weeks, but the differences were not significant. The study found no differences in HRQOL as measured by the Medical Outcomes Study Short-Form 36 (SF-36).

The studies by Williams et al.[22] and Sherman et al.[21] demonstrate that yoga therapy can provide significant benefits to patients with chronic back pain. However, these studies do not examine the mechanisms of change in detail and study a limited number of outcomes. Based on the published papers, they lack measures of psychologic symptomatology such as depression or anxiety and only study a few physiologic measures such as flexibility and strength. It is also unclear whether these data will generalize to patients of the Veterans Affairs Healthcare System who are predominantly male, and have high rates of past or present substance use and psychologic disorders. The data in the studies that have been published were drawn mostly from females (70%), and no data were reported on comorbid disorders including substance use disorders or psychologic disorders. To begin addressing these limitations, we provide preliminary data on the benefits of yoga for VA patients with chronic low-back pain, including measures of depression, fatigue, and HRQOL.

In summary, chronic back pain affects a large proportion of both the general population and of military veterans. Although numerous therapies exist for treating chronic back pain, they can be costly and tend to have limited effectiveness. In addition, some patients may prefer self-directed, noninvasive, nonpharmacologic treatment approaches. Thus, demonstrating the efficacy and cost-effectiveness of additional treatment alternatives is important. The purpose of our study was to examine the benefits of a yoga intervention for VA patients and to study the feasibility of conducting a randomized controlled trial of a yoga program for veterans with chronic back pain.

Materials and Methods

Clinical yoga program

In 2003, the VA San Diego Healthcare System began offering a therapeutic yoga program for veterans with chronic low-back pain. The program was started under the direction of a VA primary care physician who had completed intensive training in yoga therapy in India. The ongoing program consists of weekly yoga sessions led by a certified yoga instructor. VA patients with chronic low-back pain are referred by their primary care physician to the yoga program as part of clinical care. Before starting the class, each patient is evaluated by a VA physician trained in the practice of yoga to ensure that they can participate safely. Approval for participation is based on the clinical judgment of the yoga-trained physician who uses the following criteria: The yoga patients should have a VA primary care provider, have a diagnosis of chronic benign low-back pain >6 months duration, and have minimal use of narcotics for back pain or a desire to reduce this usage. Patients with spinal fusion or inserted spinal hardware, an inability to understand and follow verbal instructions, an unrealistic expectation of an immediate cure, morbid obesity, active and severe substance use disorder(s), or other acute medical or psychologic problems may be excluded from the clinical yoga program if participation would compromise safety or be disruptive to others. Patients are asked to attend at least eight yoga sessions before making a decision about whether the sessions were helpful. Patients were instructed to bring a yoga mat and large beach towel if possible, to wear loose-fitting clothing, and to limit food intake to a light meal eaten at least 2 hours before the class.

The instructor had 4 years of teaching experience when the program began in 2003 and was trained in Anusara yoga. Anusara yoga is a type of Hatha yoga that emphasizes postural alignment, coordinating movement with breath, and positive mental attitudes, such as realizing the good in all individuals. Anusara yoga is designed to serve students of any level of experience or ability, from children to seniors, and students with special therapeutic needs to advanced practitioners. The certified instructor demonstrates and leads patients through a series of 32 yoga poses that were specifically chosen for patients with low-back pain. Transition through the yoga poses occurs at a slow to moderate pace. Patients are instructed to take slow, deep breaths either in or out in conjunction with specific phases of various poses. Patients are often asked to focus their attention on the alignment of their body while performing the poses and are encouraged to emulate the optimal alignment being demonstrated by the instructor.

Participants

The research study began in 2005 with VA patients attending the clinical yoga program described above. Once screened and approved for the clinical yoga program, the yoga-trained physician told patients about the study and gave them contact information for the research team, or called them herself when asked to by the patient. Between May 2005 and August 2007, 67 patients expressed interest in participating. Eighteen (18) of these patients never attended the yoga class, could not be recontacted, or declined to participate in the unfunded research, and thus, never signed informed consent. Baseline data were available for 49 patients, and 10-week follow-up data were available for 33 patients as of August 2007. Four (4) participants were missing data on the SF-12 at either time point, leaving 29 subjects for the SF-12 analyses.

Procedures

Interested patients were asked to arrive 30 minutes prior to their first yoga session to complete the informed consent process and complete initial research questionnaires. Participants completed a follow-up assessment after 10 weeks. Because the yoga sessions had to be cancelled a few times, and/or some patients had conflicting health care appointments, a 10-week follow-up period was chosen to ensure that participants had a chance to attend at least eight sessions as requested by the physician. Patients did not receive any compensation for completing the assessments. Assessments took approximately 20–30 minutes to complete. In addition to the assessments, patients were asked to allow researchers to access their medical records in order to verify medical diagnoses and track health care utilization. Completed questionnaires were stored in locked file cabinets to protect the confidentiality of patients. Patients were assigned an identification number and data were entered into computers located on the VA secure data network. Questionnaires were scored and data was analyzed using SPSS statistical software (SPSS Inc., Chicago, IL).

Measures

Questionnaires included measures of pain, depression, energy/fatigue, and HRQOL. In addition, patients completed a sociodemographic questionnaire at baseline and were asked to complete a one-page evaluation of the program at the follow-up assessment. For the program evaluation, patients rated various aspects of the program and were asked how many sessions they attended and how often they practiced yoga at home.

Pain. Pain was measured using a single visual numeric scale (range 0–10) and five additional questions on severity/interference. The visual pain scale is a modified version of the visual analog scale and was adapted by Ritter et al.[39] The modified scale was found to be easier for subjects to use, resulting in less missing data and fewer unclear responses. The single item was found to have alternate form reliability of 0.79 and correlated $r = 0.85$ with the five-question scale.[40] The five-question severity scale (range 0–100) is a modified version of the Medical Outcomes Study pain severity scale, which was changed to omit the skip pattern and add "phys-

ical discomfort" to the item stems for the Chronic Disease Self-Management study.[40] This scale was further modified by substituting a 0–10 visual numeric scale for the original 0–20 numeric scale in items 1 and 2. The scale was shown to have an internal consistency of 0.88 and 10-day test–retest reliability of 0.91. Concurrent validity has also been established.[40]

Fatigue/energy. Energy/fatigue were measured using items adapted from the Medical Outcomes Study for use with chronic illness populations by Lorig et al.[41] The total score is calculated by taking the mean of the five questions and ranges from 0 to 5. Evaluation of the psychometric properties indicated an internal consistency for the measure of 0.89 and test–retest reliability of 0.85. Validity has also been established.[40]

Depression. Depression was assessed using the Center for Epidemiologic Studies Short Depression Scale (CESD-10),[42] which is derived from the full CES-D.[43] The frequency of mood symptoms were assessed by 10 items, rated on a four-point Likert scale ranging from 0 (Never) to 3 (All of the Time), with some items reverse-scored. Retest correlations for the CESD-10 were comparable to those in other studies ($r = 0.71$). The 10–item measure had high predictive accuracy for scores on full-length CES-D ($\hat{e} = 0.97$, $p < 0.001$). The CESD-10 was negatively correlated with positive affect ($r = -0.63$) and positively correlated with other scores of poor health ($r = 0.37$).[42] Scores can range from 0 to 30, and a score of 10 or greater is generally considered depressed. Normative data on people with assorted chronic illnesses are available.[44]

Health-Related Quality of Life (HRQOL). HRQOL was measured using the Short-Form 12 version 2 (SF12v2). Based on the SF-36,[45] the SF-12 was developed with the objective of finding a short yet meaningful measure of generic HRQOL/global health status. The measure's 12 items were selected from the SF-36 and tested through a series of stages (Jenkinson, 1997). The measure produces eight subscales that have internal consistencies ranging from 0.73 to 0.87. The Physical Composite Score (PCS-12) and Mental Composite Score (MCS-12) range from 0 to 100 and show similar levels of precision to the summary scores derived from the longer 36-item measure, with internal consistencies of 0.89 and 0.86, respectively. Furthermore, sensitivity to change was similar for the shorter version. The measure has been widely validated in many different disease groups.[46]

Attendance/home practice. Participants were asked to self-report the number of yoga sessions they attended and how often they practiced yoga at home, as was recommended by the yoga instructor. In addition, the actual number of sessions attended by each participant was obtained from VA patient medical records. Self-reported practice of yoga at home was assessed on a five-point scale (Never, 1–3 times total, 1–2 times weekly, 3–4 times weekly, Almost every day).

Program evaluation. At the follow-up assessment, participants were asked two questions about their attendance of yoga outside the VA, both prior to and concurrently with the VA San Diego yoga program. Participants were also asked to rate the health benefits they received from the yoga program, their yoga instructor, and the ease of participation in the VA San Diego yoga program. The three program elements were rated from 0 to 10 on a visual analogue scale, with 0 being the worst and 10 being the best.

Statistical analyses. Paired *T*-tests were used to compare baseline scores to those at the 10-week follow-up. Pearson correlations were used to examine whether intervention attendance or home practice was associated with better outcomes. Standardized effects sizes (Cohen's "d") were calculated by dividing the change in means between baseline and follow-up by the mean standard deviation for pain, energy, depression, and the SF-12 summary scores. In addition, effect sizes were calculated in a similar manner for the difference in pre–post change scores between participants reporting minimal versus moderate home practice. Bonferroni corrections were applied to an initial α of 0.05 by dividing by the number of variables analyzed. Therefore, significance was set at $\alpha = 0.01$.

Results

Forty-nine (49) patients agreed to participate in the study. Baseline and follow-up data were available for 33 participants. The mean age of participants was 55 years. Participants were 21% female, 70% white (12% African-American, 16% Asian-Pacific Islander), 52% married, well educated (68% college graduates), and 44% were retired (20% disabled, 32% employed) (Table 1).

Table 1. Participant Demographics and Descriptives

Variable (n = *33*)	*Mean (SD) or # (%)*
Age	55.3 (13.7)
Gender	
Female	7 (21%)
Education	
High school or GED	3 (9%)
Some college	6 (18%)
College degree	11 (33%)
Post-grad studies	13 (40%)
Ethnicity	
African-American	4 (12%)
White	23 (70%)
Hispanic	1 (3%)
Asian/Pacific Islander	4 (12%)
Other	1 (3%)
Employment	
Full-time	8 (24%)
Part-time	5 (15%)
Unemployed	1 (3%)
Disabled	6 (18%)
Retired	12 (37%)
Other	1 (3%)
Marital status	
Never married	7 (21%)
Married/partner	17 (52%)
Separated	2 (6%)
Divorced	6 (18%)
Widowed	1 (3%)

SD, standard deviation; GED, general equivalence diploma.

Table 2. Mean Scores on Health Questionnaires

	N	*Mean at baseline*	*Mean at 10-week follow-up*	*Mean change*	*SD of the difference*	p	*Effect size*[a]
Pain	33	70.94	61.36	−9.57	12.90	<0.001	0.74
Energy	33	2.02	2.66	0.64	0.89	<0.001	0.72
Depression	33	14.53	10.67	−3.87	5.29	<0.001	0.73
SF12-PCS	29	36.10	37.68	1.58	9.48	0.376	0.17
SF12-MCS	29	40.77	45.53	4.77	11.13	0.029	0.43

[a]Effect sizes are Cohen's "d" (small = 0.20, medium = 0.50, large = 0.80).
SD, standard deviation; SF-12, Medical Outcomes Study Short-Form 12; PCS, Physical Composite Score; MCS, Mental Composite Score.

Statistically significant improvements were found for pain (t (32) = −4.27, $p < 0.001$), energy/fatigue (t (32) = −4.16, $p < 0.001$) and depression (t (32) = 4.20, $p < 0.001$). A trend toward significance was seen for the Mental Health Scale of the SF-12 (t (28) = −2.31, $p = 0.029$), and the change in SF-12 PCS was minimal and not significant. Means at baseline and the 10-week follow-up assessment are presented in Table 2, along with effect size calculations.

Participants were initially asked to self-report the number of yoga sessions they attended and how often they practiced yoga at home, as was recommended by the yoga instructor. In addition, the actual number of sessions attended by each participant was obtained from VA patient medical records. The mean number of sessions attended by self-report and medical record were 6.4 and 5.8, respectively. Self-report was significantly correlated with actual attendance ($r = 0.62$, $p < 0.001$). This provides some indication that self-report of attendance and home practice may be moderately reliable.

Among the various indicators of the amount of yoga practiced, Pearson correlations indicated that actual attendance was associated with decreased pain ($r = -0.37$, $p = 0.034$). Nonsignificant correlations were found between actual attendance and depression ($r = -0.08$, $p = 0.678$), energy ($r = 0.20$, $p = 0.260$), SF-12 PCS ($r = 0.16$, $p = 0.419$), and SF-12 MCS ($r = 0.09$, $p = 0.663$). Self-report of home practice was significantly associated with improved scores for the SF-12 PCS ($r = 0.58$, $p = 0.001$) and trended toward significance for depression ($r = -0.38$, $p = 0.034$) and energy ($r = 0.44$, $p = 0.012$). Nonsignificant correlations were found between home practice and pain ($r = -0.06$, $p = 0.748$), and SF-12 MCS ($r = 0.07$, $p = 0.714$). Since home practice was measured using ordinal categories, we classified participants as reporting either minimal home practice or moderate home practice. To create a binary home practice variable from the five-point Likert scale, categories 0 (Never) and 1 (1–3 times ever) were classified as minimal home practice, while categories 2 (1–2 times weekly), 3 (3–4 times weekly), and 4 (Almost every day) were classified as moderate home practice. Table 3 presents the pre–post mean difference, t-tests results, and effect sizes (unequal variances assumed) by level of self-reported home practice.

On the program evaluation, 22 participants (67%) reported never having done yoga before, while 5 (15%) reported doing yoga 1–3 times prior, 1 (3%) reporting doing yoga 4–9 times prior, and the remaining 5 (15%) reported doing yoga 10 or more times prior to attending the VA San Diego yoga program for chronic low-back pain. Only 1 of 33 participants reported that they did yoga outside of the VA program during the study. The mean rating scores for the health benefits they received from the yoga program, their yoga instructor, and the ease of participation in the VA yoga program were 5.97, 9.09, and 6.03 respectively, with higher scores indicating more satisfaction.

Discussion

Preliminary data from an unfunded study of yoga therapy for chronic low-back pain in VA patients has been presented. These results indicate that VA patients showed sizable decreases in pain and depression along with increases in energy levels and the mental health summary score for HRQOL. Furthermore, statistically significant correlations

Table 3. Mean Differences for Participants with Minimal vs. Moderate Home Practice

Outcome	N	*Minimal home practice* (n = *19*) Δ *Mean (SD)*	*Moderate home practice* (n = *13*) Δ *Mean (SD)*	p	*Effect size*[a]
Pain	32	−6.67 (10.86)	−13.90 (15.26)	0.156	0.55
Energy	32	0.24 (0.63)	1.23 (0.94)	0.003	1.26
Depression	32	−1.58 (4.83)	−6.82 (4.42)	0.004	1.13
SF12-PCS	29	−1.77 (6.97) ($n = 17$)	6.34 (10.76) ($n = 12$)	0.034	0.46
SF12-MCS	29	3.81 (11.64) ($n = 17$)	6.11 (10.72) ($n = 12$)	0.589	0.21

[a]Effect sizes are Cohen's "d" (small = 0.20, medium = 0.50, large = 0.80).
SD, standard deviation; SF-12, Medical Outcomes Study Short-Form 12; PCS, Physical Composite Score; MCS, Mental Composite Score.

were found between documented attendance of yoga sessions, self-reported home practice, and changes in many of the health outcomes noted above. Given that the study utilized a single group pre–post study design, the results should be interpreted cautiously. Nonetheless, the pattern of results suggests that the observed improvements likely reflect a "dose–response" treatment effect related to the degree of home yoga practice as opposed to a more uniform effect of receiving a supportive intervention. Finally, the study provides evidence that it is feasible to recruit VA patients to participate in both a clinical yoga program and a yoga research program.

Similar decreases in pain as a result of yoga interventions for patients with chronic low-back pain have been found before,[20–22] but data on depression or energy/fatigue, have not been presented prior to our current study. The effect sizes found in the present study are consistent with the moderate effects sizes reported for yoga interventions in a recent review paper of nonpharmacologic treatments for low-back pain.[19]

Our current study presents "dose–response" data on the relationship between attendance, home practice, and changes on health outcomes. This issue has not been examined in previous published studies of yoga for chronic low-back pain. The statistical evidence correlating actual attendance, self-reported home practice, and health outcomes suggests that the yoga intervention is associated with the improved health outcomes; however, additional research is needed to confirm the nature of this relationship. It is especially interesting that the group reporting moderate home practice has sizable changes on both the SF-12–PCS and the SF-12–MCS, while the undivided sample improved mainly on the SF-12–MCS.

Another important distinction between the current study and existing literature is the focus on a sample of VA patients. Previous study samples consisted of mostly female nonveterans recruited from the general public or from a group health cooperative. VA patients differ from the general population and from veterans in general in a number of ways. VA patients are a subset of all U.S. veterans, with VA patients tending to be slightly older, less educated, not employed, and with lower incomes than both non-VA veterans and the general U.S. population.[47] VA patients tend to be 90–95% male, whereas data from prior yoga studies and our current sample (21% females) suggest that women may be more likely to participate in yoga or in yoga research studies. This is important because improving the health of female veterans and including them in research is a current objective of the VA Healthcare System.[48] In addition, comparing the biographical characteristics of our sample with national VA data suggests that VA patients with more education may be more likely to participate in yoga or in yoga research studies. Therefore, although our sample may be different from participants in previous studies, our sample does not appear to be representative of all VA patients, but instead may be a subset of VA patients who may be more likely to participate in, and benefit from, a yoga intervention. In fact, the program evaluation results suggest that about a third of participants had tried yoga before and 15% had done so more than 10 times. Thus, it is unlikely that any intervention requiring active participation will appeal to all VA patients, but adding yoga to a menu of effective treatments from which patients choose is a more realistic goal.

Other data from the program evaluation suggest that participants were very highly satisfied with the yoga instructor but were less than fully satisfied with the health benefits and with the ease of participation. Currently, the yoga sessions are only offered once per week at 11:30 AM each Tuesday. This may limit participation for some participants, and offering sessions more frequently at varying times of the day/week seems desirable. It is hard to interpret the satisfaction with the health benefits of the yoga program without more detailed qualitative information. The mean rating was 5.97/10 and may reflect unrealistic expectations of a total cure of their chronic condition for some participants. However, more information is needed.

In conclusion, our study provides preliminary data indicating that yoga interventions may help VA patients with chronic low-back pain. A larger randomized controlled trial is needed to answer these questions more definitively. Our current study shows that yoga programs are of interest to VA patients, may especially appeal to female VA patients, and that conducting research in this area is feasible within the VA Healthcare System.

Disclosure Statement

No competing financial interests exist.

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