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Conventional and Unconventional Treatments for Stress among Methadone-Maintained Patients: Treatment Willingness and Perceived Efficacy

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Abstract

We surveyed 150 methadone maintenance treatment (MMT) program patients about willingness to use, and perceived efficacy of, conventional and unconventional nonpharmacological stress-related treatments. Although levels of treatment willingness and perceived efficacy for both conventional and unconventional treatments were high, ratings for conventional interventions were, on average, significantly higher than those for unconventional ones. Dimensions of psychiatric distress—but not demographic or MMT characteristics—predicted treatment willingness for conventional therapies and treatment willingness and perceived efficacy for unconventional therapies. These findings are likely to have implications for resource and program planning in MMT programs.

INTRODUCTION

While many methadone maintenance treatment (MMT) clinicians are familiar with evidence-based treatments and report positive attitudes toward them, opioid dependent patients often avail themselves of a wide range of conventional and unconventional medical interventions.^{1–3} Unconventional treatments refers to medical interventions that are not taught widely in U.S. medical schools or generally available in U.S. hospitals.⁴ Although still in its infancy, research on unconventional medicine among patients with substance-related disorders, including those with opioid-related disorders, has increased in recent years. Generally, these studies have yielded mixed findings regarding the efficacy of unconventional medicine interventions and have emphasized the need for increased scientific rigor in evaluating these approaches.^{3,5–10}

While the importance of patient preferences in medical treatment decision-making is increasingly recognized,^{11,12} there is a surprising paucity of published research on MMT patients' perceptions of conventional and unconventional medical treatments. Extant research on MMT patient perceptions has focused on (a) satisfaction with MMT and specific MMT services,^{13,14} (b) perceived efficacy of MMT programs,¹⁵ and (c) preferences for particular types of treatment programs (e.g., drug-free rehabilitation, inpatient detoxification), opioid agonist medications (e.g., oral methadone, buprenorphine), or clinic-

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based contingencies or incentives.^{11, 16-18} To our knowledge, only one published paper has examined MMT patients' attitudes toward unconventional medical treatment.¹¹ Study participants were provided a list of one unconventional (i.e., acupuncture) and 14 conventional (e.g., oral methadone, buprenorphine) medical treatments and were asked to rate the interventions for perceived usefulness in assisting heroin use cessation: acupuncture was ranked thirteenth.¹¹

Whereas we previously reported on the prevalence of pain, substance use and psychiatric correlates, and prior pain treatment utilization among the study sample, we did not report on findings related to willingness to use stress-reducing conventional and unconventional treatments or perceived efficacy of such interventions.^{1, 19} The primary goal of this needs assessment study was to examine treatment willingness and perceived efficacy of nonpharmacological conventional and unconventional treatments for managing stress. Specifically, the present study aimed to examine the association between three sets of variables—demographics (i.e., gender, race or ethnicity, age, educational level, employment status), treatment characteristics (i.e., months of current MMT episode, number of different MMT episodes), and psychiatric distress (i.e., depression, anxiety, somatization, overall psychiatric distress, and personality disorder criteria)—and willingness to use and perceived efficacy of conventional and unconventional nonpharmacological stress-related treatments. These data might be useful for MMT resource and program planning.

MATERIALS AND METHODS

Participants

Participants were 150 MMT patients (85 men and 65 women) aged 19 to 61 years (*M*, 41.5; *SD*, 10.2) who were in treatment for at least six months (*Mdn* = 24; *Q*₁ = 12; *Q*₃ = 60) at one of the three opioid agonist treatment programs operated by the APT Foundation, Inc. (hereafter referred to as APT), a private not-for-profit community-based organization located in New Haven, CT. At the beginning of data collection, APT had a census of approximately 1,500 MMT patients. Participants were predominantly Caucasian (58%), male (57%), never married (53%), and unemployed (43%) or disabled (29%). A majority of participants had at least a high school level of education (68%). All participants had at least one prior MMT episode; the frequency of prior MMT episodes ranged from 1 to 15 (*Mdn* = 2; *Q*₁ = 1; *Q*₃ = 3).

Design

The current study employed a cross-sectional survey design.

Procedures

Participants were self-selected in response to study flyers indicating, "This study aims to better understand patients' experiences and treatment needs at APT." No reference to stress, conventional medicine, or unconventional medicine was mentioned in the flyer. Flyers were posted at APT's Legion, Orchard, and Park MMT clinics. Study inclusion criteria were that participants needed to be (1) currently enrolled in MMT at APT and (2) English speaking. The first 50 patients from each of the 3 clinics who responded to the flyer by contacting a research assistant were admitted into the study. All patients who spoke with a research assistant about the study agreed to participate. Research assistants administered the questionnaire packet after describing the study, including the potential benefits and risks of study participation. Participants were paid \$10 for study participation. This study, involving the use of survey data without subject identifiers, was presented to the Human Investigations Committees at APT and the Yale University School of Medicine and was exempted from

review per United States Department of Health and Human Services (HHS) regulation 45 CFR 6.101(b)(2).

Measures

The needs assessment study questionnaire was developed by the authors, pilot tested on 3 experienced research assistants, 5 seasoned intake workers, and 10 MMT patients using established guidelines, and revised based on pilot testing feedback.²⁰ The survey was deliberately designed to be brief (<5 minutes) and easy to understand in order to increase compliance and to minimize participant burden. Participants were provided with a list of interventions and response cards, informed that “People cope with stress and problems in different ways,” and asked, “If the following treatments were offered to you by a trained professional one-on-one at APT, how willing would you be to try each of them?” “Also, how effective do you think that they would be in treating your stress and problems?” Participants were asked to rate each treatment using 5-point Likert-type scales for willingness [0 (“Not willing at all”) to 4 (“Completely willing”)] and perceived efficacy [0 (“Not effective at all”) to 4 (“Completely effective”)]. The list of conventional and unconventional medical interventions was generated by the authors based on our experience treating patients in our MMT programs and was revised based on the feedback of selected research assistants, intake workers, and MMT patients, as described above.

The list of stress-reduction treatments included (a) “Physical Exercise,” (b) “Meditation,” (c) “Prayer or Spiritual Counseling,” (d) “Nutrition (advice about healthy food choices),” (e) “Progressive Muscular Relaxation Training (teaches you step-by-step how to relax muscles in your body),” (f) “Visualization Training (teaches you step-by-step how to imagine scenes to help you relax),” (g) “Anger Management Training,” (h) “Sleep Hygiene Training (teaches strategies to help you sleep at night),” (i) “Communication Skills Training (teaches you guidelines for communicating effectively with others),” (j) “Acupuncture (type of Chinese medicine that involves inserting needles on different parts of a person’s body),” (k) “Massage Therapy,” and (l) “Hypnosis.”

For data analytic purposes, we classified interventions as conventional or unconventional based on whether they were taught widely in the U.S. or generally available in U.S. MMT programs.⁴ Conventional medical treatments included physical exercise, nutrition or advice about healthy food choices, progressive muscular relaxation training, anger management training, sleep hygiene training, and communications skills training, and unconventional medical treatments included meditation, prayer or spiritual counseling, visualization training, acupuncture, massage therapy, and hypnosis. As more data regarding the safety and efficacy of these interventions and their availability in MMT programs become available, it is possible that some of the interventions listed as unconventional in this study will be better characterized as conventional.

The Brief Symptoms Inventory 18 (BSI-18;²¹) is an 18-item instrument, designed to screen for psychiatric disorders, that contains 3 subscales: depression, somatization and anxiety, and a total global severity index (GSI) score. Respondents rate items using a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely); these raw scores are then converted to area T scores ($M = 50$, $SD = 10$) to facilitate interpretation. The Iowa Personality Disorder Screen (IPDS;²²) is an 11-item mini-structured interview that assesses respondents’ thoughts and feelings and was used in the current study to assess personality disorder criteria. Participants provided information about gender, race, age, education, employment, length of current MMT episode and number of prior MMT episodes.

Data Analysis

Descriptive data (means and standard deviations) were calculated for conventional and unconventional medical interventions for treatment willingness and perceived efficacy. Differences on treatment willingness and perceived efficacy across conventional and unconventional interventions were calculated using *t*-tests. Univariate associations between treatment willingness, perceived efficacy, and other study variables were computed using Pearson correlations for continuous variables and Spearman's rho correlations for dichotomous variables. Linear regression analyses were conducted to test three broad classifications of variables (demographic, treatment characteristic, and psychiatric) as predictors of participants' dimensional scores reflecting treatment willingness and perceived efficacy of conventional as well as unconventional treatments. Statistical significance was set at $p < 0.05$. Given the magnitude of the correlation between the BSI anxiety and depression subscales ($r = 0.75$, $p < 0.01$), depression was removed from the linear regression analyses due to concerns about collinearity. We reran regression analyses by including depression and removing anxiety from the respective models; however, depression did not make an independent contribution to any of the models. Statistical analyses were performed using SPSS Version 15.0 for Windows (SPSS, Inc., Chicago, IL).

RESULTS

Conventional and Unconventional Treatments

Table 1 summarizes means and standard deviations for treatment willingness and perceived efficacy regarding conventional stress-reduction medical interventions. Participants' average ratings for conventional treatment willingness and the perceived efficacy of these interventions were 2.3 (SD = 1.0) and 2.3 (SD = 1.0), respectively. On average, participants were most willing to try nutrition or advice about healthy food choices as a stress-reduction treatment and were least willing to try anger management training. Similarly, on average, participants rated nutrition or advice about healthy food choices and anger management as the highest and lowest in terms of perceived conventional treatment efficacy, respectively.

Table 1 also summarizes participants' ratings of treatment willingness and perceived efficacy regarding unconventional stress-reduction medical interventions. Participants' average ratings for unconventional treatment willingness and their perceived efficacy were 2.0 (SD = 1.0) and 2.0 (SD = 0.9), respectively. On average, participants were most willing to try massage therapy as a stress-reduction treatment and were least willing to try hypnosis. Similarly, on average, participants rated massage therapy and hypnosis as the highest and lowest in terms of perceived unconventional treatment efficacy, respectively.

On average, participants reported higher treatment willingness ($t = 3.0$, $df = 148$, $p = 0.003$) and perceived efficacy ($t = 4.6$, $df = 148$, $p = 0.001$) for conventional in comparison to unconventional treatments. Higher levels of treatment willingness were associated with higher levels of perceived efficacy for both conventional ($r = 0.86$, $p < 0.01$) and unconventional ($r = 0.90$, $p < 0.01$) interventions.

Factors Associated with Treatment Willingness and Perceived Efficacy

Table 2 summarizes the correlations between demographic, treatment characteristics, and psychiatric distress variables and dimensional ratings of treatment willingness and perceived efficacy of conventional and unconventional stress-related treatments. Demographics, with the exception of gender and race, and treatment characteristics were not associated with conventional or unconventional treatment willingness or perceived efficacy. Female gender was associated with greater unconventional treatment willingness, and white race was associated with lower conventional treatment willingness and perceived efficacy. Higher

levels of anxiety were associated with higher levels of treatment willingness and perceived efficacy for both conventional and unconventional treatments. While general psychiatric distress was not associated with perceived efficacy of conventional treatment, higher levels of general psychiatric distress were associated with higher levels of treatment willingness for conventional and unconventional treatments and higher levels of perceived efficacy of unconventional treatment.

Prediction of Treatment Willingness and Perceived Efficacy

Overall, demographic and treatment characteristic domains did not contribute significantly to treatment willingness or perceived efficacy for conventional or unconventional treatments. However, the psychiatric distress domain—a total of three variables—accounted for 5.5% and 9.2% of the variance in reports of conventional [$F(3, 144) = 2.77, p = .04$] and unconventional [$F(3, 145) = 4.90, p = .003$] treatment willingness, respectively, and 9.1% of the variance in reports of perceived efficacy of unconventional treatment [$F(3, 145) = 4.83, p = .003$]. The regression model involving the perceived efficacy of conventional treatment was not significant: [$F(3, 144) = 2.41, p = .069$].

As summarized in Table 3, while individual psychiatric variables did not make significant contributions to conventional treatment efficacy, anxiety made a significant positive independent contribution to willingness to use conventional treatment. For both unconventional treatment willingness and perceived efficacy, anxiety made a significant positive contribution, while personality disorder criteria made a significant negative independent contribution.

DISCUSSION

This study is among the first to examine treatment willingness and perceived efficacy of nonpharmacological conventional and unconventional treatments for managing stress among methadone-maintained patients. Overall, MMT patients endorsed relatively high levels of treatment willingness and perceived efficacy for both conventional and unconventional treatments. On average, patients reported higher levels of treatment willingness and perceived efficacy for conventional in comparison to unconventional treatments. Treatment willingness was robustly associated with perceived treatment efficacy for both conventional and unconventional treatments.

On average, MMT patients' treatment willingness for conventional stress reduction interventions was between "moderately willing" and "very willing" and their perceived efficacy for these treatments was between "moderately effective" and "very effective." On average, the conventional stress-related interventions that were rated highest and lowest in terms of treatment willingness and perceived efficacy were nutrition or advice about healthy food choices and anger management, respectively. Prior studies have documented the high prevalence of chronic medical conditions related to poor diet among patients in MMT (e.g., diabetes) and the beneficial changes in diet, weight, and blood lipids following brief nutritional counseling and in consumption of saturated fats, fruits and vegetables following more intense counseling interventions.^{23,25} Consequently, further investigation of nutritional counseling interventions for MMT patients seems warranted. Although anger management, to our knowledge, has not been systematically examined in MMT patients, some interventions based primarily on cognitive-behavioral principles have demonstrated efficacy.²⁶

On average, MMT patients rated their treatment willingness for unconventional treatments as "moderately willing" and their perceived efficacy for these treatments as "moderately effective." On average, the unconventional stress-related interventions that were rated

highest and lowest in terms of treatment willingness and perceived efficacy were massage therapy and hypnosis, respectively. Hypnosis and massage therapy have been well-studied and have shown efficacy in clinical practice.^{27,28} While prior investigations have highlighted the potential importance of examining massage therapy as a pain management strategy among patients seeking or already enrolled in MMT,^{1,29} our study suggests that given high levels of treatment willingness and perceived efficacy, further investigation of this intervention for stress reduction among MMT patients is warranted.

Our findings extend previous research¹¹ by demonstrating that varying dimensions of psychiatric distress—and not demographic or MMT treatment characteristics—predict treatment willingness for conventional therapies and treatment willingness and perceived efficacy for unconventional therapies for managing stress. Attitudes regarding treatment willingness and perceived efficacy are complex and are characterized by different psychiatric distress predictors. Whereas higher anxiety was a significant predictor of conventional and unconventional treatment willingness and perceived efficacy of unconventional treatment, lower personality disorder criteria was a significant predictor of treatment willingness and perceived efficacy for unconventional treatment. These findings point to the importance of assessing multiple domains of psychiatric distress and suggest that treatment willingness and perceived efficacy of nonpharmacological stress-management interventions are not diminished among MMT patients with greater psychopathology.

Several potential limitations are worth noting. Participants self-selected for study participation; it is unclear if patients who enrolled in the study were different from those who did not. Participants were enrolled in treatment at three opioid agonist treatment clinics run by the same organization in a particular geographic location; thus, our findings may not generalize to other MMTs in different geographic regions. Although study data were collected anonymously and participants were informed that their answers would not affect their treatment, the questionnaire was completed at the treatment facility and this may have affected the responses of participants concerned about how staff might react to their responses. The survey was cross-sectional and thus limits statements regarding causation between study variables. The study measured perceived treatment willingness and efficacy and not actual treatment utilization patterns. The association between perceived treatment willingness and efficacy and actual utilization patterns in MMT patients is unclear. While the examination of patient preferences has not been extensively examined in substance abuse treatment research, particularly in MMT settings, it has been a fertile area of research investigation in psychotherapy research and has been emphasized in medical research.^{12,30}

Given the absence of validated measures for conventional and unconventional treatment willingness and perceived efficacy for MMT patients, we developed an instrument, which although face-valid, has not been formally validated. In particular, the list of examples of conventional and unconventional stress-reduction treatments that was provided to participants was not exhaustive. Future research on this topic might benefit from a more comprehensive listing of these interventions and examining current levels of stress, perceived need for stress-reduction treatments, and the extent to which participants had experience with the interventions mentioned (see ³¹).

Despite these limitations, this exploratory study represents an important investigation of willingness to use, and perceived efficacy of, conventional and unconventional stress-related treatments among MMT patients. The findings highlight the relatively high levels of treatment willingness and perceived efficacy for stress reduction interventions, in particular conventional ones. Study findings may also have implications for resource and program planning in MMT: Programs that wish to develop or expand stress-reduction interventions

might benefit from initially evaluating those treatments rated high on treatment willingness and perceived efficacy such as nutritional counseling.

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Table 1

Treatment willingness and perceived efficacy of conventional and unconventional stress-reduction medical interventions.

Stress-Reduction Interventions	Treatment Willingness		Perceived Efficacy	
	Mean	St. Dev.	Mean	St. Dev.
Conventional				
Physical Exercise	2.4	1.4	2.4	1.4
Nutrition or advice about healthy food choices	2.6	1.3	2.6	1.2
Progressive muscular relaxation training	2.4	1.4	2.4	1.3
Anger management training	1.8	1.6	2.1	1.6
Sleep hygiene training	2.3	1.5	2.3	1.4
Communication skills training	2.1	1.5	2.3	1.4
Mean Total	2.3	1.0	2.3	1.0
Unconventional				
Meditation	2.0	1.5	2.1	1.4
Prayer or spiritual counseling	2.4	1.5	2.4	1.5
Visualization training	1.7	1.5	1.7	1.4
Acupuncture	2.0	1.6	2.0	1.5
Massage therapy	2.5	1.4	2.6	1.4
Hypnosis	1.6	1.5	1.5	1.4
Mean Total	2.0	1.0	2.0	0.9

Table 2

Correlates between demographics, psychiatric distress, treatment characteristics, and treatment willingness and efficacy (n = 150).

Variable	Conventional		Unconventional	
	Willingness	Efficacy	Willingness	Efficacy
Demographics				
Gender	-.02	-.05	-.17 *	-.15
White race	-.24	-.19 *	-.16	-.11
Age	.09	-.04	.06	.01
High school diploma (yes/no)	-.03	.01	.09	.09
Employment full-time (yes/no)	-.12	-.02	-.09	-.04
MMT characteristics				
Months of current MMT episode	-.07	-.03	-.08	-.02
Number of different MMT episodes	-.06	-.08	.03	.05
Psychiatric distress				
BSI-18 Depression	.15	.07	.14	.09
BSI-18 Anxiety	.23 **	.18 *	.24 **	.23 **
BSI-18 Somatization	.11	.01	.16	.09
GSI	.21 *	.13	.22 **	.17 *
IPDS	.09	.07	-.04	-.05

Note. Gender was scored 1 = male, 0 = female. MMT = Methadone Maintenance Treatment; BSI-18 = Brief Symptoms Inventory, 18 items; GSI = Global Severity Index; IPDS = Iowa Personality Disorder Screen.

*
p<.05.

**
p<.01.

Table 3

Significant standardized regression coefficients of conventional and unconventional treatment efficacy and perceived efficacy.

Psychiatric Distress	Conventional		Unconventional	
	Willingness ($R^2=.06$)	Efficacy ($R^2=.07$)	Willingness ($R^2=.09$)	Efficacy ($R^2=.09$)
BSI-18 Anxiety	.27 *	-	.33 **	.37 **
IPDS	-	-	-.22 *	-.22 *

Note. BSI-18 = Brief Symptoms Inventory, 18 items; IPDS = Iowa Personality Disorder Screen.

*
p<.05.

**
p<.01.