The ADDOPT Study (Acupuncture to Decrease Disparities in Pain Treatment): Feasibility of Offering Acupuncture in the Community Health Center Setting

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Abstract

Objectives: This article describes the feasibility and acceptability of the Acupuncture to Decrease Disparities in Outcomes of Pain Treatment (ADDOPT) trial, which incorporates acupuncture as an adjunct to usual treatment for chronic pain in urban health centers.

Design: The study assessed feasibility (ability to carry out in real-world practice; adequacy of resources; acceptability to patients, acupuncturists, and primary care clinicians).

Setting: Four (4) community health centers in the Bronx, NY, participating in the New York City Research and Improvement Networking Group (NYC RING), a practice-based research network dedicated to decreasing health disparities through primary care research and quality improvement in the urban safety net setting, were involved.

Subjects: The subjects comprised participants receiving care for chronic pain due to osteoarthritis, or neck or back pain at four Bronx health centers serving low-income families.

Intervention: The intervention involved up to 14 weekly acupuncture treatments.

Outcome measures: Pain and functional status are assessed during a 6-week run-in period before, during, and postacupuncture treatment using the Brief Pain Inventory and the 12-Item Short Form Health Survey. This article reports on baseline status, referral and recruitment, engagement with treatment, and delivery of the intervention across sites.

Results: Of 400 patients referred, 185 have initiated treatment. The majority of attending physicians have referred, most commonly for back pain ($n=103$; 60.6%). Participants' average age is 53.9 (standard deviation [SD] 14.1); 54.1% are Hispanic; and 57.6% are on Medicaid. Half (48%) report "poor" or "fair" overall health. Patients report an average disability score of 74 (SD 27.0) and baseline pain severity on the Brief Pain Inventory of 6 (SD 1.9). Patients have completed a mean of 8.0 (SD 4.7) treatments; 72.4% complete >5 sessions.

Conclusions: Clinicians in this urban setting have incorporated acupuncture into chronic pain management. Despite disability and lack of familiarity, patients initiate acupuncture and show high levels of engagement with treatment.

Introduction

THIS ARTICLE WILL REPORT the preliminary experience of the Acupuncture to Decrease Disparities in Pain Treatment (ADDOPT) study. The goals of this National Institutes of Health-funded project are twofold. The first is to evaluate the feasibility and acceptability of offering acupuncture for chronic pain in the urban community health center setting, where it has rarely been available in the past. The second,

which will be reported in a future article, is to evaluate the effectiveness of acupuncture in treating chronic pain in this setting. The present article describes the authors' experience implementing the project in four health centers, including referral and enrollment, engagement with treatment, and acceptability to patients, clinicians, and acupuncturists.

Inadequate treatment of chronic pain is a major problem, so much so that the Joint Commission on Accreditation of Healthcare Organizations and other accrediting bodies have

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worked to establish pain assessment as the "Fifth Vital Sign" in hopes of raising practitioner awareness of this problem. There is substantial evidence that minority populations differ both in prevalence and outcomes of chronic pain. Access to care is a key component in these differences; studies indicate that race/ethnicity, other demographic characteristics, and socioeconomic factors influence access to pain care¹ and treatment of pain.²⁻⁴

In the United States, access to acupuncture for patients with chronic pain conditions has been limited by the lack of insurance-reimbursed acupuncture services. Complementary and alternative medicine (CAM) users are typically middle-aged, better educated, and in higher income brackets.⁵⁻⁸ Little is known about the use of CAM among the less well to do, since only a few small-scale studies of CAM use by low-income groups exist,⁹ with highly variable reported rates depending on the community and the type of CAM investigated.^{8,10,11} There is a pressing need to examine questions of access and barriers to CAM care as well as questions of effectiveness in low-income, underserved, culturally diverse populations. Thus, this project incorporates acupuncture into pain care for a primarily low-income, ethnically diverse population; this article explores the feasibility of a flexible and practical model of delivery.

Methods

The ADDOPT study is approved by the Albert Einstein College of Medicine Committee on Clinical Investigation and enrolled its first patients in March 2009.

This project takes place in four health centers of the New York City Research and Improvement Networking Group (NYC RING), a practice-based research network dedicated to decreasing health disparities through primary care research and quality improvement in the urban safety-net setting. This project is a collaboration between NYC RING, the Continuum Center for Health and Healing (an integrative medicine program at Beth Israel Medical Center), the Swedish Institute Acupuncture Program, and Pacific College of Oriental Medicine. Goals of the collaboration are to test the feasibility of offering acupuncture at no cost in primary care settings, and to increase research capacity in the acupuncture schools.

Patients are referred to the study by their primary care physicians. All practices are community health centers serving low-income areas of the Bronx; two of them are also family medicine residency training sites (Table 1). Medical staff at each of the four health centers received a brief (60 minutes) orientation to the study, including an overview of acupuncture procedures and a summary of the evidence for effectiveness to date in chronic pain conditions. Eligible patients are over age 21, suffering from chronic pain (3

months or more) due to osteoarthritis, neck or back pain, fluent in English or Spanish, able to provide home phone numbers to facilitate scheduling, and available for up to 14 weekly treatments. Patients are not eligible if they are on anticoagulants. Once referred, patients undergo a telephone screening and consent process with one of the study staff.

The study employs a "multiple settings across baseline" design.¹² In this nonrandomized repeated-measures design, each study participant has multiple pre and post measures, allowing assessment of what may be variable patterns of pain pre-intervention¹³ and assessment of each patient's response in comparison to their baseline. This design permits offering the intervention without randomization to all patients with target diagnoses who meet eligibility criteria, maximizing limited resources and also maximizing acceptability to patients and health center staff. In order to collect pre-acupuncture assessments of pain, a run-in period was included prior to the initial acupuncture session. This run-in period was limited to 6 weeks so that patients experiencing pain can initiate potentially helpful treatment, within a time frame that is consistent with typical time to appointments for many consultations.

Following the run-in period, patients begin weekly acupuncture sessions for up to 14 weeks. Treatment is provided at each site by a faculty preceptor and 3 supervised student interns from the Swedish Institute and the Pacific College of Oriental Medicine, at no cost to patients. Acupuncturists evaluate patients based on the medical history, examination of the tongue (Tongue Diagnosis) and pulse (Pulse Diagnosis) and palpating the meridians, then make an assessment and formulate a treatment plan. This approach to acupuncture is an extremely broad-based and flexible approach, incorporating both the recently popularized principles of Traditional Chinese Medicine as well as techniques of Classical Chinese Medicine, which includes sinew, primary, and divergent meridian treatments as well.¹⁴ The acupuncture team is free to adapt and change the treatment approach from week to week based on the evolving clinical condition of the patient and their response to treatment. Although the approach here did not include herbal medicines—which would be necessary in some cases to completely reflect the "real-life" holistic practice of Chinese Medicine—it did more accurately reflect true acupuncture practice in its use of flexible individualized treatment rather than point protocol formulas. All patients also continue with usual care from their primary care providers while receiving acupuncture.

Pain and functional status data are collected again at 2, 4, 8, 12, and 24 weeks following initial treatment. Measures include the Brief Pain Inventory (BPI), the 12-Item Short Form Health Survey (SF-12), Pain-Free Days, and the Patient Global Impression of Change. In addition to these outcome variables, process data are systematically collected to assess study feasibility, as defined by the Institute of Medicine¹⁵ to include whether the project (1) functions in the real world, (2) is adequately resourced, and (3) is acceptable to stakeholders, in this case patients, acupuncturists, and primary care clinicians.

Results

Participants

As expected, back pain is the most common enrolled diagnosis ($n=103$; 60.6%), followed by osteoarthritis ($n=33$;

TABLE 1. REFERRALS BY PRACTICE SITE

Practice	Attendings	% of Attendings referring	Residents	% of Residents referring
Site 1	8	100	0	n/a
Site 2	6	83.3	0	n/a
Site 3	24	87.5	19	100
Site 4	13	100	16	56.3

n/a, not applicable.

19.4%). Some have multiple conditions ($n=20$, 11.8%). In terms of demographics (Table 2), the average age in this sample to date is 53.9 (SD 14.1); 73.5% of participants describe themselves as English-speaking while 24.1% describe themselves as Spanish-speaking; 54.1% of patients are Hispanic. Regarding employment status, 34.7% of the subjects describe themselves as disabled and an additional 12.4% are unemployed; the remainder are employed either full or part time. Regarding income, 45.3% are from households earning less than \$20,000 per year; 3.5% report household incomes of \$50,000 or greater; 57.6% of the subjects to date are on Medicaid; 24.7% have private insurance, and 6.5% are uninsured.

The baseline levels of pain and disability in our study population are reported in Table 3. Patients report an aver-

age disability score of 74 (SD 27.0, possible range 0–100) and an average baseline pain severity on the BPI of 6 (SD 1.9, possible range 0–10), similar to scores of patients attending pain clinics.¹⁶ Baseline scores on the SF-12 also reflect significant morbidity, with 48% of the sample scoring in the “poor” or “fair” range for overall health.

Acceptability

Primary care clinician acceptance has been high. To date, 400 patients have been referred at the four sites. Physician referrals reflect unmet need for chronic pain care and willingness of physicians to refer patients after discussing pain management during an office visit with an eligible patient. Referrals have come from a large percentage of the physicians at each site including both attending physicians and residents (Table 1); at two sites, 100% of attending physicians have referred at least 1 patient to the trial. At the two residency training sites, referral rates by residents are 100% and 56%, respectively. Of the 400 referred patients, 244 entered the study. At the time of this article, 187 have undergone the baseline interview, and 185 have actually initiated treatment (75.8%) and 23.3% ($n=57$) are on a treatment wait list. Of those who have not initiated acupuncture, about half declined without reason or did not return calls. Other reasons for not initiating acupuncture are schedule or transportation difficulties, skepticism related to acupuncture or participating in research, or being too disabled. Referrals often exceeded capacity and resulted in wait lists; time from referral to beginning the run-in period averages 55.6 days but varies by site (range 15–112 days).

Student feedback on the experience has been positive for the majority of students. Regular lunchtime feedback sessions were conducted with participating students, who consistently commented on the value of seeing patients in a medical setting, and particularly of the opportunity to treat patients with a higher level of pain and disability than they typically see at their own clinic. They also appreciated the ability to receive referrals directly from and interact with physicians and other medical personnel, and used the opportunity to learn about the medical conditions they were treating (including referred diagnoses and comorbid conditions). Finally, many students appreciated the opportunity to participate in a research protocol and expressed a wish to learn more about research methods.

To further evaluate acceptability of acupuncture to the study's patient population, the authors are also interested in the proportion who continue after initiation. A benchmark of five or more treatments was established as reflecting a real engagement with care. Of patients initiating treatment to date and have been in the study for 5 or more weeks ($n=170$), approximately 72% (123/170) have participated in five or more treatments. The mean number of treatments per patient overall is 8.0 (SD 4.7), and there is no statistically significant variation by diagnosis. There are also no statistically significant differences in the proportion of patients engaging in five or more treatments in regard to referring diagnosis, baseline level of pain and disability, baseline functional status as measured by SF-12, and specific demographic factors. Reasons for withdrawal after at least one treatment include no improvement (11; 18.0%), too sick to attend appointments (14; 22.6%), scheduling difficulties (15; 24.6%), and no longer interested (17; 27.9%).

TABLE 2. PARTICIPANT DEMOGRAPHICS ($N=170$)

Mean age (years)	53.9 (SD = 14.1)	
	N	%
Language spoken most frequently		
English	125	73.5
Spanish	41	24.1
Other	3	1.8
Born in United States	84	49.4
Marital status		
Married	41	24.1
Living with a partner	8	4.7
Divorced	20	11.8
Widowed	23	13.5
Separated	21	12.4
Never married	1	.6
Single	54	31.8
Other	1	.6
Race/ethnicity		
Hispanic	92	54.1
Non-Hispanic black	46	27.1
Non-Hispanic white	6	3.5
Non-Hispanic other	24	14.1
Working status		
Unemployed	21	12.4
F/T	42	24.7
P/T	8	4.7
Disabled	59	34.7
Insurance		
Fee for service Medicaid	6	3.5
Mgd care Medicaid	92	54.1
Private insurance	42	24.7
No insurance	11	6.5
Household income		
Less than \$20,000	77	45.3
\$20–\$29,000	16	9.4
\$30–\$39,000	13	7.6
\$40–\$49,000	5	2.9
Greater than \$50,000	6	3.5
Don't know/refused	49	28.8
Education		
Some HS or less	58	34.1
HS grad	37	21.8
Some college	46	27.1
College grad +	25	14.7

SD, standard deviation; F/T, full time; P/T, part time; Mgd, managed; HS, high school.

TABLE 3. BASELINE PAIN, DISABILITY, AND FUNCTIONAL STATUS^a

Measure (possible scale range)	1–4 treatments (n = 47)		≥ 5 treatments (n = 123)						Total (n = 170)	
Chronic Pain Grading Scale (CPGS)	m ₁	SD	m ₂	SD	(m ₁ – m ₂)	CI 95% (m ₁ – m ₂)	p	m _t	SD	
Disability (0–100%)	76.2	26.1	73.1	27.4	3.2	(–6.2, 12.5)	0.50	74	27.0	
Pain Intensity (0–100%)	76.9	14.0	77.7	14.4	–0.8	(–5.8, 4.1)	0.74	77.5	14.3	
Brief Pain Inventory (BPI)										
Pain Severity (0–10)	6.6	2.0	6.8	1.9	–0.3	(–.91, .41)	0.46	6.8	1.9	
Pain Interference (0–10)	7.1	2.5	6.9	2.7	0.2	(–.67, 1.1)	0.64	6.9	2.6	
Pain-Free Days (PFD)										
Days with pain last 2 weeks (0–14)	12.4	3.6	13.0	2.6	–0.7	(–1.8, .49)	0.26	12.9	2.9	
Pain Impact Questionnaire (PIQ-6)										
Pain score (40–78)	69.4	6.0	68.0	6.5	1.4	(–.82, 3.6)	0.21	68.4	6.4	
SF-12										
Physical health (0–100)	30.3	8.4	32.1	10.1	–1.8	(–5.2, 1.7)	0.31	31.6	9.6	
Mental health (0–100)	35.2	12.8	38.7	14.4	–3.4	(–8.4, 1.6)	0.18	37.7	14.0	
SF-12 Overall health rating	n ₁	%	n ₂	%			0.63	n _t	%	
Poor	6	12.8	23	18.7				29	17.1	
Fair	16	34.0	36	29.3				52	30.6	
Good	19	40.4	40	32.5				59	34.7	
Very good	4	8.5	18	14.6				22	12.9	
Excellent	2	4.3	6	4.9				8	4.7	

^aHigher score on BPI reflects more severe pain; higher score on 12-Item Short Form Health Survey (SF-12) reflects higher level of function. SD, standard deviation.

Resources

Resource requirements for this model of delivering acupuncture in primary care are intentionally modest and generally adequate. Two (2) recurring issues are worth noting: availability of examination room space and student interns. Delivery of acupuncture by student/preceptor teams requires at least three examination rooms, and the participating health centers have very few sessions each week when they can accommodate this space requirement. At teaching health centers, this problem was solved by delivering acupuncture during the one afternoon when residents and most faculty are engaged in didactics. At a nonteaching site, a very successful Saturday session was initiated during which examination room space is ample. With regard to availability of student interns, 2 of 22 academic terms to date have had an unfilled slot. Travel time from campus to the primary care site, and lack of flexibility with regard to scheduling the session (due to space constraints) led to students choosing other off-site elective placements.

Discussion

Although there have been a number of challenges, the results to date clearly demonstrate that it is feasible to offer acupuncture in the urban community health center setting as an adjunct to primary care for the management of chronic pain. The first important finding has been the significant demand for acupuncture in this patient population, despite a lack of familiarity or previous experience with acupuncture. This demand is demonstrated by the number of patients who agree to referral in the four centers; in fact, the total number of patients referred at the four centers has exceeded the capacity and resulted in sometimes lengthy wait lists to initiate treatment.

It was also demonstrated that primary care practitioners in this setting, with only a minimal amount of education/training on acupuncture, are willing to refer large numbers of patients for the service. The primary care providers at each of the health centers were offered one 60-minute training session on acupuncture for chronic pain. This suggests that practitioners working in underserved settings may be willing to incorporate new approaches such as acupuncture without a large institutional investment of training and infrastructure in preparing them for that role.

Perhaps even more importantly, a high level of engagement with treatment among this patient population was also demonstrated, despite the complexity of these patients' social and medical situations, and substantial disability and baseline pain among the patients. Although patients with chronic pain tend to be high utilizers of care,¹⁷ it was not known whether the introduction of an entirely new approach such as acupuncture—with which the vast majority of the patients are not familiar—would meet with the same level of engagement that conventional health services do in this population. Over 72% of the participants have attended five or more acupuncture treatment sessions, suggesting that despite a lack of familiarity with the discipline and despite the many barriers to regular attendance in care experienced by patients in this setting, patients are motivated to incorporate acupuncture into their care in a serious and committed fashion.

A critical barrier to providing acupuncture as well as many other alternative healing approaches to underserved populations is the lack of adequate insurance reimbursement for these services. A significant success of this project has been to demonstrate the feasibility of delivering this care using students and an "apprentice" model. The costs involved with this approach are to cover the faculty preceptors, and because

the clinic experience is part of the students' required curriculum, this cost is covered by the students' tuition.

Challenges

As would be expected in implementing any new service in a community-based, medically underserved setting, a number of challenges have been encountered in launching the model described here. For example, there are drawbacks to relying on student acupuncturists rather than paid staff: acupuncture clinics had to be scheduled in accord with the schools' academic calendar, and travel time to the clinical sites had to be factored in. Clearly the model requires that clinical sites be within reasonable travel distance to an acupuncture school, which means it may not be applicable in rural areas or many smaller cities. However, with over 60 accredited acupuncture schools nationally, all of which require clinical sites for student training, this model may be feasible in many areas.

The second major challenge has been finding space in busy urban health centers for a non-income-generating activity. In general, health centers run at or above their room capacity in order to be financially stable; since patients are not charged for acupuncture and the study budget does not allow for fees to the health centers, space has sometimes been an obstacle. Offering acupuncture on Saturdays and other lower-demand time slots helped address this problem, but ultimately a modest charge to patients might be required to cover the costs of space utilization in the health center.

Conclusions

Despite challenges, the feasibility and acceptability results presented here suggest that the ADDOPT model may be very useful as a strategy to expand the options available for management of chronic pain in underserved areas. Referral rates from health center practitioners are high, and the results of this study clearly demonstrate willingness on the part of patients suffering from chronic pain to actively engage with acupuncture treatment despite their lack of familiarity with this approach.

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Disclosure Statement

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