

Complementary and Alternative Medicine in an Integrated Health Care Delivery System: Users of Chiropractic, Acupuncture, and Massage Services

Tracy McCubbin, MD; Karin L Kempe, MD, MPH; Arne Beck, PhD

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ABSTRACT

Introduction: Complementary and alternative medicine research has relied primarily on survey data from community populations rather than from patient populations receiving these services in integrated health care delivery systems (IHDS).

Objectives: To describe patients seeking chiropractic, acupuncture, or massage therapy in a dedicated Center for Complementary Medicine (CCM) within an IHDS.

Methods: Patient surveys at the initial CCM visit included chief complaint, prior treatments, and relief with treatment (0% to 100% relief). A modified Brief Pain Inventory assessed average and current pain (0 = no pain; 10 = unbearable pain) and interference with life domains (1 = does not interfere; 10 = completely interferes). Demographics and CCM provider type were obtained from medical records. Analysis included patients who completed the survey.

Results: Between 2007 and 2014, a total of 27,225 patients sought CCM services (median age = 50 years). Most (62%) were female, and 73% were white. Modalities included chiropractic (66.9%), acupuncture (18.1%), and massage (15.0%). Spine/truncal pain was most commonly reported (70.5%). A majority of patients (59%) saw their physician for their condition, 59% had not used CCM services previously, and 60% received medications for their condition. Mean ratings included pain relief with prior treatment (30.07%, standard deviation [SD] = 27.01%), current pain (4.33, SD = 2.4), and functional impairment ranging from 3.03 (SD = 3.09) for relationships to 5.42 (SD = 3.22) for enjoyment of life.

Conclusion: Spine/truncal pain was the most common complaint and chiropractic the most common modality among patients receiving CCM services in an IHDS. More than one-third of patients self-referred to the CCM.

INTRODUCTION

The use of complementary and alternative medicine (CAM),¹ including chiropractic, acupuncture, and massage, has become widespread in the US. A 2007 National Health Interview Survey showed 40% of adults (N = 23,393) reporting use of these services in the previous 12 months,¹ expenditures of \$33.9 billion, and an estimated 354.2 million visits to CAM practitioners.²

This report was based on completed interviews with a response rate of 68%.

A national telephone survey of 1539 adults, published in the *New England Journal of Medicine* in 1993, showed that 83% of those using unconventional therapies (now called CAM) for serious conditions also sought care from a medical doctor, but only 28% informed their physician of CAM use.³ Therefore, bringing CAM services into an integrated health care delivery system (IHDS) such as Kaiser Permanente (KP) could be of great value in meeting members' care needs in a manner that ensures coordination with conventional medical care through the use of a joint electronic medical record (EMR). Moreover, given that lawmakers in states such as Oregon and Washington are recognize acupuncture, chiropractic, naturopathy, and massage as covered services, understanding the demand for such benefits is important to both clinicians and insurers.

Much previous research has focused on utilization of CAM services across a broad spectrum of the population through telephone surveys.³⁻⁵ It is unknown if the characteristics of patients seeking CAM therapies in an IHDS would mirror that of the general population. This article describes a large population of insured adults seeking three types of CAM care within a prepaid IHDS during a seven-year period. Unlike the previous surveys about CAM use, we report actual CAM use among a population of patients in an integrated delivery system.

METHODS

Setting

The Centers for Complementary Medicine (CCM) at KP Colorado (KPCO) is a group of CAM clinics in an IHDS that currently serves more than 650,000 members in Colorado. The program was started in 2003 and currently has 5 separate clinics. Four clinics are located in a KPCO medical office building. The fifth clinic is located inside a medical office building adjacent to and owned by KPCO's main contract hospital. All locations offer acupuncture, chiropractic, and massage therapy. Depending on their benefits, KPCO members have a copay for CCM services (eg, Medicare members with chiropractic benefits comprise approximately 30% of our CCM population) or pay a discounted fee for service.

Tracy McCubbin, MD, is the Founder and former Medical Director for the Centers for Complementary Medicine at Kaiser Permanente in Denver, CO. E-mail: tracy.mccubbin@kp.org. Karin L Kempe, MD, MPH, is the former Medical Director of Clinical Prevention Services in the Department of Population Care and Prevention Services at Kaiser Permanente in Denver, CO. E-mail: karinkempe@comcast.net. Arne Beck, PhD, is the Director for Quality Improvement and Strategic Research at the Institute for Health Research in Denver, CO. E-mail: arne.beck@kp.org.

Center for Complementary Medicine Survey

In 2007, a CCM patient survey was developed and implemented in CCM clinics. Surveys were administered to patients at the first visit to the CCM as part of routine clinical assessment and entered by CCM staff into the EMR. Electronic medical record notes from the first and fifth visits to CCM were routed electronically to the in-basket of the primary care physician (PCP) to facilitate communication with the PCP and coordination with conventional medical care. These notes provided information that the patient was evaluated in CCM for a specified condition, a summary of the CCM survey, and the treatment course for that condition. If no PCP was assigned, the notes were copied to the CCM Medical Director for review. This study focused on the initial CCM visit for patients requesting a single modality—chiropractic, acupuncture, or massage—between May 8, 2007, and December 31, 2014. All patients completed the CCM survey at their first visit during this time period.

Characteristic	Number (%) ^a
Age (years)	
Median (25th and 75th percentiles)	50 (36, 64)
Mean (standard deviation)	50 (17.6)
Sex	
Female	16,990 (62.4)
Male	10,235 (37.6)
Race/ethnicity	
White	19,881 (73.0)
Hispanic	3290 (12.1)
African American	855 (3.1)
Asian American	573 (2.1)
Native American	72 (0.3)
Native Hawaiian or Pacific Islander	75 (0.3)
Other, multiracial, or unknown	2,479 (9.1)

^a Data presented as number (%) unless otherwise indicated.

The survey included the following information: 1) primary reason for the visit; 2) whether the individual had seen or planned to see his or her PCP for his or her condition; 3) current treatments and medications received for this condition (before receiving CCM services), and degree of relief with current treatment (0% relief to 100% relief). In addition, questions adapted from the Brief Pain Inventory (BPI) were used to assess both the sensory dimension of pain and its interference in various dimensions of the patient's life. These questions include ratings for average pain and current pain (pain ratings ranging from 0 = no pain to 10 = unbearable pain), and the degree to which the condition interfered with general activity, mood, walking ability, normal work, relations with other people, sleep, and enjoyment of life.⁶ Ratings for these measures of interference in life domains ranged from 0 (does not interfere) to 10 (completely interferes). The BPI was originally introduced in 1982. The Pain Research Group at the University of Wisconsin Medical School in Madison, WI, under the direction of Charles Cleland, PhD, tested and developed the self-report BPI for measuring cancer pain; they subsequently applied the BPI more broadly to studies of other types of pain (eg, chronic pain, musculoskeletal pain, fibromyalgia) and pain treatment in the US and internationally.⁶

A copy of the modified CCM survey is provided in the Appendix (available online at: www.thepermanentejournal.org/files/2017/16-172-Appendix.pdf). Additional demographic data on age, sex, self-reported race/ethnicity, and type of CCM clinician (massage therapist, acupuncturist, chiropractor) were obtained from a virtual data warehouse populated by EMR data from the IHDS.

The KPCO institutional review board reviewed and approved this study.

Analysis

The CCM survey data as well as CCM clinician specialty and patient age, sex, and race/ethnicity were extracted from KPCO's EMR and entered into a database (SAS 9.4, SAS Institute, Cary, NC). The primary analyses were descriptive (frequencies,

Primary reason for visit	Total, No. (%) (N = 27,049)	Chiropractor, No. (%) (n = 18,097)	Licensed acupuncturist, No. (%) (n = 4897)	Massage therapist, No. (%) (n = 4055)
Spine/truncal pain	19,080 (70.5)	14,813 (81.9)	1899 (38.8)	2368 (58.4)
Extremity pain	2367 (8.8)	1011 (5.6)	792 (16.2)	564 (13.9)
Neurologic	1841 (6.8)	1087 (6.0)	482 (9.8)	272 (6.7)
Other (pain)	1448 (5.4)	387 (2.1)	899 (18.4)	162 (4.0)
Generalized and muscle pain	1088 (4.0)	461 (2.5)	243 (5.0)	384 (9.5)
Stress/anxiety	402 (1.5)	42 (0.2)	186 (3.8)	174 (4.3)
Leg pain	279 (1.0)	177 (1.0)	90 (1.8)	12 (0.3)
Abdominal pain	145 (0.5)	23 (0.1)	112 (2.3)	10 (0.2)
Sinusitis/allergies	123 (0.5)	15 (0.1)	105 (2.1)	3 (0.1)
Insomnia	59 (0.2)	7 (0)	45 (0.9)	7 (0.2)
None reported	115 (0.4)	41 (0.2)	4 (0.1)	70 (1.7)
Missing	102 (0.4)	33 (0.2)	40 (0.8)	29 (0.7)

^a Excludes 2 patients with multiple primary reasons for first visit and another 174 patients because of missing clinician titles (which were used to determine treatment modality).

percentages, means, medians), including patient demographics, reason for visit, past treatments, treatment modality, pain intensity, and physical and social/emotional functional impairment.

RESULTS

There were 27,225 unique, initial CCM visits with an associated CCM questionnaire between May 8, 2007, and December 31, 2014. Demographic data for this patient cohort are shown in Table 1. Most patients seeking CCM services were female (62%) and white (73%), with a median age of 50 years. This population was somewhat older and contained a higher proportion of females than the overall KPCCO member population, which has an average age of 45 years and is 53% female. The racial/ethnic distribution of patients seeking CCM services was comparable to the larger KPCCO adult membership.

Table 2 shows the primary reason patients sought CCM services by treatment modality. Most patients sought chiropractic services (66.9%), followed by acupuncture (18.1%) and massage therapy (15.0%). Spine/truncal pain was reported most often as the primary reason for the visit, regardless of treatment modality (70.5%).

Fifty-nine percent of patients surveyed reported having seen their PCP for their condition before the initial CCM visit, and 59% of patients indicated that they had not used other CAM services before their CCM visit. In addition, 60% reported receiving over-the-counter and/or prescription medications for their condition.

Patients at their initial CCM visit were asked the following question about prior non-CAM treatment: "What percentage describes the relief of your condition with your current treatment?" Using a response scale ranging from 0% for no relief and 100% for complete relief, patients provided an average rating of 30.07% (standard deviation [SD] = 27.01%). Patients were also asked about current pain and functional impairment at their initial CCM visit. On a scale ranging from no pain (0) to unbearable pain (10), the mean rating of current pain was 4.33 (SD = 2.40). Table 3 shows that patients' ratings of the degree to which their condition interfered with various life domains ranged from a mean of 3.03 (SD = 3.09) for relationships to 5.42 (SD = 3.22) for enjoyment of life.

DISCUSSION

In this study, we describe the use of massage, acupuncture, and chiropractic services as they became available within KPCCO in the form of a fee-for-service clinic in an IHDS. Unlike many previous studies based on community surveys, our large dataset was obtained from actual patient visits to the CCM clinic during a seven-year period.

Most of this large population of adult CAM users were older white women, the most frequently used modality was chiropractic, and most patients sought treatment of spine/truncal pain. Most patients (59%) had previously seen their PCP for their condition, and most had not previously used CAM services, but they did report using prescription and/or over-the-counter pain medications.

The KPCCO CCM visit volume grew over the study period as additional clinics were added and patient awareness of the program

Table 3. Functional impairment rating because of condition at initial visit^a

Functional status rating	Mean ^b	Standard deviation
Enjoyment of life	5.42	3.22
General activity	5.21	3.02
Mood	4.77	3.02
Normal work	4.47	3.33
Relationships	3.03	3.09
Sleep	4.82	3.25
Walking ability	3.67	3.38

^a 0 = does not interfere; 10 = completely interferes.

^b Means are based on varying response rates across questions, from 25,788 for normal work to 26,303 for general activity.

grew, with a substantial minority of patients (41%) self-referring to the CCM. Although most patients indicated that they had not used other CAM services before their CCM visit, we found through an annual postvisit satisfaction survey that patients expressed their willingness to try chiropractic, massage therapy, and/or acupuncture because they were offered within KPCCO. In addition, although not tracked formally throughout the study period, we know that physician referrals to the CCM increased during the study period. In the first year of our program, there were no physician referrals, but by 2015, there were approximately 3200 physician referrals. The Mayo Clinic compared physician surveys from 2004 and 2012 and found their physicians developed a more positive attitude toward CAM therapies in that period.⁷ Our informal discussions with KPCCO physicians also suggest a more positive attitude toward CAM therapies over time as the volume of CCM visits increased.

The largest volume of visits to the CCM was for chiropractic care. According to a National Center for Health Statistics report, use of practitioner-based chiropractic manipulation is higher in the Mountain Region of the US at 11.4% compared with the national average of 8.5%.⁸

In our dataset, 31% of the patients were older than age 65 years, similar to findings from other surveys.^{3,9-11} In the future, CAM services may play a key role in meeting the needs of our aging population, estimated to reach 20% older than age 65 years by 2030.¹²

Although most (59%) of the patients had already seen their PCP for their condition, they reported pain and functional impairment in the midrange of these rating scales at the start of CAM therapy. This finding suggests that the CAM modalities that patients chose may address an unmet need for adjunctive care for which patients were willing to pay a copay or out-of-pocket fees. Although we do not know the reasons why the other 41% self-referred without first contacting the primary care office, we believe that understanding why so many patients made this choice may help us improve the care provided for these conditions by the conventional medical system or suggest opportunities to better manage them. Furthermore, our findings indicate that most of the patients did not plan to see their PCP in the future for the same condition or were undecided after their treatment in the CCM. Shifting of services from primary care settings to CAM clinics

for patients with musculoskeletal pain may also have cost-savings potential.¹³ Davis et al¹⁴ showed an inverse relation between supply of chiropractors and visits to PCPs because of back and neck pain among 17.7 million Medicare enrollees. They estimated that chiropractic care is associated with 0.37 million fewer visits to PCPs annually at a cost savings of \$83.5 million.¹⁴

Numerous studies have assessed pain and functional impairment with the BPI across diverse populations (urban vs rural; different nationalities), and medical conditions (cancer, musculoskeletal pain),^{6,14-16} although fewer studies have focused on the use of the BPI among those seeking or referred for CAM services.¹⁷⁻²⁰ Comparing results from these studies with those from the present study requires caution about the generalizability to subsets of the population of members with different types of pain seeking CAM services in an IHDS. In addition, because we used a modified version of the BPI, caution is further warranted in comparing ratings from this study with others using the BPI. Nevertheless, some of the findings from these studies show comparable pain and functional impairment ratings as well as areas where the findings diverge. The cross-sectional study by Peleg et al²⁰ of 163 Israeli patients visiting a complementary medicine clinic because of pain showed similar ratings of current pain and interference with life domains compared with those of KPCO patients. Vallerand et al²¹ surveyed 595 residents from urban, suburban, and rural communities and showed pain ratings generally comparable to those reported by KPCO patients. Average pain relief from conventional treatment was rated lower for KPCO patients compared with Israeli patients and compared with patients surveyed by Vallerand et al. However, these patients used a CAM self-treatment regimen that included a wide variety of herbal products and supplements and/or CAM modalities, including but not limited to chiropractic, massage, and acupuncture.²¹

The primary contribution of this study is that our large dataset was obtained from actual patient visits to dedicated CAM clinics within an IHDS, rather than from population-based estimates of CAM use derived from community surveys, as has been the case with many previous descriptive studies of CAM services. As such, our results are informative regarding the types of pain for which actual patients seek CAM services, and their self-reported degree of pain and functional impairment.

Our study also had limitations. We used descriptive, cross-sectional data to describe the population of patients seeking CAM services during a seven-year period. Although prior research suggests that CAM treatments may be particularly effective in improving clinical outcomes and reducing costs for patients with chronic pain, stress, and/or depressive symptoms who have higher utilization of services, we were unable to evaluate clinical outcomes and track possible cost reductions associated with CCM care.¹⁰ We also did not evaluate the impact of multiple other factors that may influence CAM use within an IHDS, including differential copays, geographic distribution, attitudes of referring physicians, or the reasons that patients at the CCM did not seek conventional medical care at their PCP's office. Although we studied a large cohort of patients seeking CAM services, our results reflect an insured, care-seeking population and may not be applicable to the general population. In addition, because we used

a modified version of the BPI, we cannot assume that it had the same validity and reliability as the original form of the instrument. Future research may involve linking our CAM questionnaire data to claims and encounter data on diagnoses, medications, health services utilization, and health care costs for patients at the CCM, and examining the relationship between receipt of CAM services and subsequent changes in pain and functional impairment. Additional analyses could also include case-control studies comparing outcomes for CAM recipients with those of matched controls who do not receive such services (eg, acupuncture or massage therapy for low back pain vs physical therapy, changes in use of narcotics after CAM treatment, impact of CAM on health care utilization and costs for patients with chronic pain).

CONCLUSION

This large study describes 7 years of data from insured adults receiving chiropractic, acupuncture, and massage therapy in a fee-for-service CAM center within an IHDS. The addition of the CCM clinic to the overall health care delivery model ensured that such complementary care was delivered with quality oversight and using a common EMR which provided communication to primary and specialty care clinicians. This study also provides insight into the demographic and clinical characteristics of this population of CAM users; spine/truncal pain was the most common complaint, and chiropractic services the most commonly sought modality. Fully 41% of patients did not see a PCP first for their condition. Those patients who did have initial traditional medical treatment even with clinically significant pain relief (30%) still sought additional CCM services, demonstrating the value of such care to patients with common musculoskeletal complaints. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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People

Take care of people, not illnesses.

— Eugene A Stead, Jr, 1908-2005, physician and founder of the physician assistant profession