Perceived Benefit of Complementary and Alternative Medicine (CAM) for Back Pain: A National Survey

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Background: **Complementary and alternative medicine (CAM) is commonly used to treat back pain, but little is known about factors associated with improvement.**

Methods: **We used data from the 2002 National Health Interview Survey to examine the associations between the perceived helpfulness of various CAM therapies for back pain.**

Results: **Approximately 6% of the US population used CAM to treat their back pain in 2002. Sixty percent of respondents who used CAM for back pain perceived a "great deal" of benefit. Using multivariable logistic regression, the factor associated with perceived benefit from CAM modalities was reporting that a reason for using CAM was that "conventional medical treatment would not help" (odds ratio [OR], 1.46; 95% CI, 1.14–1.86). The 2 factors associated with less perceived benefit from CAM modalities were fair to poor self-reported health status (OR, 0.58; 95% CI, 0.41–0.82) and referral by a conventional medical practitioner for CAM (OR, 0.7; 95% CI, 0.54–0.92). Using chiropractic as a reference, massage (OR, 0.62; 95% CI, 0.46–0.83), relaxation techniques (OR, 0.25; 95% CI, 0.14–0.45), and herbal therapy (OR, 0.3; 95% CI, 0.19–0.46) were all associated with less perceived benefit whereas those with similar perceived benefit included yoga/tai chi/qi gong (OR, 0.71; 95% CI, 0.41–1.22) and acupuncture (OR, 0.71; 95% CI, 0.37–1.38).**

Conclusions: **The majority of respondents who used CAM for back pain perceived benefit. Specific factors and therapies associated with perceived benefit warrant further investigation. (J Am Board Fam Med 2010;23:354–362.)**

Keywords: **Primary Health Care, Chronic Disease, Complementary Medicine, Alternative Medicine, Back Pain, Chiropractic**

In the United States, back pain affects between 15% and 30% of the population yearly and is the second leading reason for ambulatory care visits.[1,2] Back pain is the most common reason for complementary and alternative medicine (CAM) use in the United States, and patients with back pain have more office visits to CAM practitioners than to primary care physicians.[3,4] In 2007 the American College of Physicians and the American Pain Society published updated clinical guidelines for the diagnosis and treatment of lower back pain based on high-quality meta-analysis for acupuncture[5];

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Cochrane systematic reviews on acupuncture, massage, and spinal manipulation[6–9]; and moderate evidence of yoga for low back pain.[10] These guidelines recommended that physicians consider referring patients who do not improve with self-care for acupuncture, massage therapy, spinal manipulation, and/or yoga.[11]

Despite the high prevalence of back pain, the large number of patients with back pain using CAM therapies, and CAM's potential efficacy for treatment of back pain, little is known about the pattern of CAM use, the reasons for its usage, and the perceived benefit of CAM nationally among patients with back pain. With CAM therapies being included in the most recent lower back pain guidelines and the large number of patients using CAM for back pain, a more complete picture of use is needed. The availability of data from the 2002 National Health Interview Survey (NHIS), which included many variables in Andersen's[12,13] Model of Health Services Use, created an opportunity to examine CAM utilization among persons with back pain. Information provided by the analysis may help guide future research in identifying populations, CAM modalities, and factors associated with perceived benefit for studies about the efficacy, safety, and cost-effectiveness of CAM for patients with back pain.

In this context, we sought to describe patients who use CAM for back pain in terms of sociodemographic and clinical characteristics, types of CAM modalities used, and reasons for using CAM for back pain. We also sought to determine independent factors correlating with perceived benefit of CAM for back pain.

Methods

Survey Description

We used data from the 2002 NHIS, a nationally representative survey of the resident civilian noninstitutionalized US population. NHIS is an in-person household survey conducted in English or Spanish by the Centers for Disease Control and Prevention's National Center of Statistics. Households were selected using a multistage sampling design. Multistage sampling is a cost-effective method that ensures households from all regions of the United States and people from all ethnicities are included in the survey. One adult (age ≥18 years) member of each household was randomly chosen to answer additional questions regarding basic information about demographics, health status, and access to and use of health care service. In 2002, NHIS included a supplemental survey involving Alternative Health/CAM. The final adult sample for NHIS and the supplemental CAM survey totaled 31,044 respondents, with an overall weighted response rate of 74%. Our analysis included all respondents to the 2002 NHIS and the Alternative Health/CAM survey.

Our primary outcome was perceived helpfulness of CAM for respondents who had back pain during the past 12 months. The supplemental survey included 17 complementary and alternative therapies: acupuncture, ayurveda, biofeedback, chelation, chiropractic, energy healing/reiki, folk medicine, homeopathy, hypnosis, massage, naturopathy, natural herbs, prayer, relaxation techniques, special diets, vitamins, and yoga/tai chi/qi gong. We excluded prayer as a CAM modality to be consistent with the CAM literature. To analyze individual CAM modalities for perceived helpfulness for back pain, we limited our study to CAM modalities that had sufficient sample sizes ($n > 40$). This included 6 CAM modalities used for back pain: chiropractic, acupuncture, massage, relaxation techniques, herbal therapy, and yoga/tai chi /qi gong.

For each of the 17 CAM modalities mentioned in the supplemental CAM survey, respondents were asked a series of follow-up questions: Did you use [modality] to treat a specific health condition or problem? For what health problem or conditions did you use [modality]? Respondents could choose more than one from a list of 73 medical conditions. Choice number 69 was "back pain or problem." If respondents selected more than 3 medical conditions, they were asked to select the 3 that were the most bothersome. For the 3 most bothersome health conditions, respondents were subsequently asked about the perceived helpfulness of the specific CAM modality for that condition (How much do you think [therapy] helped your condition?). Response options for the perceived helpfulness question included "a great deal," "some," "a little," or "none." For our analysis we recoded CAM modalities as helpful if respondents chose "a great deal." Variables used as covariates in our analysis are listed below.

CAM respondents were also asked reasons for CAM use: "Did you choose [therapy] for any of the following reasons? Please say yes or no to each

one." Choices included "Conventional medical treatments would not help you," "Conventional medical treatments were too expensive," "[therapy] combined with conventional medical treatments would help you," "A conventional medical professional suggested you to try [therapy]," and "You thought it would be interesting to try [therapy]."

Statistical Analysis

All analyses used SAS-callable SUDAAN software version 8.1 (Research Triangle Institute, Research Triangle Park, NC) to obtain proper variance estimates that accounted for the complex NHIS sampling scheme. We used descriptive statistics to describe the association between perceived helpfulness of CAM therapies and sociodemographic and clinical factors, specific CAM modalities, and reasons for CAM use. We used logistic regression modeling to assess which factors were significantly associated with ($P < .05$) perceived benefit of CAM among back pain respondents. Based on previous literature about CAM use we included (1) sociodemographic factors (age, race, sex, income, educational attainment, employment, regional location, marital status); (2) health care access (insurance); (3) and clinical factors (body mass index, self-reported health status, smoking) as covariates in our analysis. We used backward elimination[14] to identify factors associated independently with perception of helpfulness. Variables were retained if $P < .05$. Our secondary database analysis was approved by the Harvard Medical School Institutional Review Board.

Results

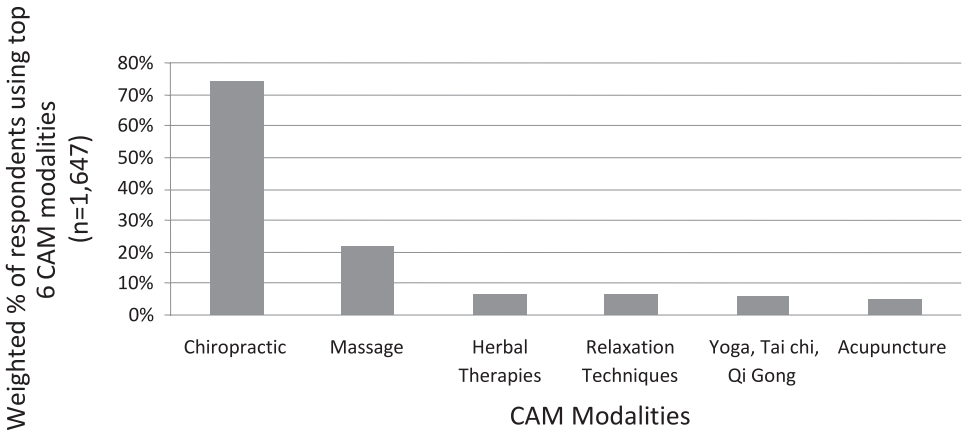
Table 1 describes the sociodemographic and clinical characteristics of respondents who used the top 6 CAM therapies (chiropractic, massage, herbal therapy, acupuncture, yoga/tai chi/qi gong, and relaxation techniques) for back pain. Ninety-five percent of respondents who had used CAM for back pain reported using one of these 6 CAM modalities. We compared the sociodemographic and clinical characteristics among respondents who used the top 6 CAM therapies with those who used any of the 16 CAM therapies ($P > .05$ for each comparison). In terms of clinical characteristics, respondents who used CAM for back pain tended to self-report excellent, very good, or good health; to

Table 1. Sociodemographic and Clinical Factors of Respondents Who Used the 6 Most Frequently Used Complementary and Alternative Medicine Modalities for Back Pain during the Previous 12 Months

Sociodemographic and Clinical Characteristics	CAM Users with Back Pain (%) (n = 1,647)
Age (years)	
<30	17
30–39	22
40–49	25
50–64	24
≥65	12
Sex	
Male	44
Female	56
Education	
<High school	9
Completed high school	61
Beyond high school	30
Annual household income ($)	
<20,000	17
20,000–34,999	27
35,000–64,999	24
≥65,000	28
Race	
White	90
Non-white	10
Employment	
Employed	70
Unemployed	30
Insurance	
Private	68
Medicare	14
Medicaid	3
Uninsured	1
Unknown	2
Region	
Northeast	20
Midwest	32
South	26
West	23
Married	51
Self-reported health status	
Excellent/very good/good	88
Fair/poor	12
Body mass index	
<18.5	2
≥18.5–25	38
>25–29	35
≥30	22
Smoker	24

CAM, complementary and alternative medicine.

Figure 1. Use of the 6 most frequently used complementary and alternative medicine (CAM) modalities for back pain during the previous 12 months. These modalities are not mutually exclusive and are limited to respondents for whom back pain was one of the 3 most bothersome medical conditions.



have a BMI between 18.5 and 30; and to classify themselves as nonsmokers.

Prevalence of CAM Use Among Respondents with Back Pain

Of the 31,044 NHIS respondents, 6% of the US population had used at least one of the 16 CAM therapies for back pain during the previous 12 months (weighted for US population, this corresponds to 5.4 million adults). Among the most common CAM modalities for back pain, chiropractic was used by the most respondents (74%, corresponding to 4 million adults) followed by massage, which was used by 22% of respondents (corresponding to 1.2 million adults) (Figure 1).

Of those who used one of the 6 most commonly used CAM modalities for back pain, 69% of respondents used only one CAM therapy, 21% used 2 CAM therapies, 8% used 3 CAM therapies, 1% used 4 CAM therapies, and <1% used ≥5 CAM therapies. Overall, 60% of respondents reported great benefit from using these top 6 CAM modalities. Chiropractic, massage, and yoga/tai chi/qi gong had the greatest perceived benefit (Table 2).

Comparison of Respondents by Perceived Benefit

We compared the sociodemographic and clinical characteristics of respondents who perceived great benefit for the 6 most common CAM therapies with those who perceived less benefit. In these comparisons, respondents' overall sociodemographic characteristics did not differ significantly except that respondents who perceived great benefit were more likely to be non-Hispanic white and to be currently employed ($P < .05$). Of the 3 clinical factors, those who perceived great benefit included those with better self-reported health status and those who were nonsmokers ($P < .05$ for each comparison; data not shown).

Reasons for CAM Use for Back Pain

Table 3 shows respondents' reasons for using CAM for back pain. More than half of the respondents felt CAM in combination with conventional medicine would help and 48% were interested in trying CAM. However, only 24% of respondents stated their conventional medical practitioner suggested the use of CAM for back pain.

Multivariable Analysis

Among the top 6 CAM modalities used for back pain, the factors independently associated with the

Table 2. Perceived Benefit of the 6 Most Frequently Used Complementary and Alternative Medicine Modalities for Back Pain

Modalities*	Those with Great Benefit from CAM (Weighted %)
Chiropractic (n = 1,163)	66
Massage (n = 196)	56
Yoga, Tai chi, Qi Gong (n = 45)	56
Acupuncture (n = 89)	42
Herbal therapies (n = 78)	32
Relaxation techniques (n = 76)	28

*The modalities listed are not mutually exclusive.
CAM, complementary and alternative medicine.

Table 3. Reasons for Using the 6 Most Frequently Used Complementary and Alternative Medicine Modalities for Back Pain

Reasons for Use	CAM Users Who Reported Reasons for Use (%) (n = 1,647)
Conventional medical treatment would not help	27
Conventional medical treatment was too expensive	13
Used conventional medicine and CAM together	53
Conventional medical practitioner suggested CAM	24
Interested in trying CAM	48

CAM, complementary and alternative medicine.

perception of a "great deal" of benefit included CAM users with back pain who reported that they used CAM because "conventional medicine would not help" (Table 4). Factors associated independently with less benefit for CAM included self-report of fair or poor health status; a conventional medical practitioner suggested CAM; and the use of massage, relaxation techniques, and herbal therapies (compared with chiropractic).

Discussion

Using nationally representative data collected in 2002 from US adults, we found that 6% had used CAM during the prior year to treat back pain. The 2 most common CAM modalities used for back pain were chiropractic and massage. Sixty percent of respondents who used the top 6 CAM modalities for back pain reported a "great deal" of benefit. The top 6 CAM modalities were used by 53% of respondents with back pain because they felt that a combined use of conventional medical medicine and CAM would help their back pain. Only 24% of respondents using CAM for back pain reported that their conventional medical practitioner suggested its use. The 2 factors independently associated with greater perceived benefit from CAM for back pain were (1) having better self-reported health status (odds ratio [OR], 0.58; 95% CI, 0.41–0.82) and (2) report of CAM use because "conventional medical treatment would not help" (OR, 1.46; 95% CI, 1.14–1.86). A factor associated independently with less benefit from CAM for back pain was referral for CAM by a conventional practitioner (OR, 0.7; 95% CI, 0.54–0.92). Respondents who used acupuncture (OR, 0.71; 95% CI, 0.37–1.38) and yoga/tai chi/qi gong (OR, 0.71; 95% CI, 0.41–1.22) seemed to have a perceived benefit comparable to chiropractic whereas massage (OR, 0.62; 95% CI, 0.46–0.83), relaxation techniques (OR, 0.25; 95% CI, 0.14–0.45); and herbal therapy (OR, 0.3; 95% CI, 0.19–0.46) were all associated with less perceived benefit than chiropractic.

Similar to previous surveys of CAM use for other medical conditions,[15–17] we found that users

Table 4. Multivariable Analysis of Perceived Improvement after Use of the 6 Most Frequently Used Complementary and Alternative Medicine Modalities for Back Pain*

Predictors	Adjusted Odds Ratio (95% CI)
Sociodemographic	
Age	
<30	0.85 (0.59–1.22)
30–39	Reference
40–49	1.02 (0.75–1.4)
50–64	1.15 (0.82–1.62)
≥65	1.07 (0.71–1.61)
Sex	
Male	Reference
Female	1.22 (0.96–1.54)
Race	
White	Reference
Non-white	0.85 (0.6–1.22)
Self-reported health status	
Excellent/very good/good	Reference
Fair/poor	0.58 (0.41–0.82)
Reasons for CAM use	
Patients stated conventional medical treatment would not help	
Yes	1.46 (1.14–1.86)
No	Reference
Conventional medical practitioner suggest CAM to their patients	
Yes	0.7 (0.54–0.92)
No	Reference
CAM modalities	
Chiropractic	Reference
Acupuncture	0.71 (0.37–1.38)
Herbal therapies	0.3 (0.19–0.46)
Massage	0.62 (0.46–0.83)
Yoga, tai chi, qi gong	0.71 (0.41–1.22)
Relaxation techniques	0.25 (0.14–0.45)

*Controlling for type of complementary and alternative medicine (CAM) therapy.

of CAM for back pain tended to be young, non-Hispanic white, women, and had completed at least high school (Table 1). An earlier study[18] reported that patients with worse self-reported health status tended to use CAM at higher rates. Worse overall self-reported health status is an indicator of chronic disease and predicts mortality.[19–21] Although not directly comparable with other published studies,[15,16] we found the large majority of respondents that used CAM for back pain reported better health status. Similarly, we found that those with better health status were more likely to perceive benefit. Our findings could be explained by the preponderance of acute back pain (as opposed to chronic back pain) among our population. Those with chronic back pain may have worse quality of life and be less likely to improve whereas those with acute back pain may rate themselves as having a better quality of life and be more likely to improve based on the natural history of the disease.

Chiropractic and massage were found to be the 2 most common CAM modalities used to treat back pain. This finding is consistent with that reported by Wolsko et al[4] using data collected in 1997 about CAM usage for back and neck pain. When we compared results obtained in 2002 with those collected in 1997 we noted that acupuncture use had increased 5-fold and use of yoga/tai chi/qi gong for back pain had doubled.[21] The increased use of acupuncture may be partly explained by the increase in the percentage of workers covered by health insurance that includes coverage of acupuncture. In 1997, Oxford Health became the first major health care plan in the United States to offer comprehensive coverage for a range of alternative care services, which included acupuncture.[22] According to the Kaiser Family Foundation's 2004 Annual Survey of Employer Health Benefits, by 2002 39% of conventional medical health plans covered acupuncture.[23] From 2002 to 2004 an additional 14% of employers offered acupuncture as a covered health benefit.[23] One study suggested that increased coverage of acupuncture would lead to increased usage.[24] Another possible contributing factor to the 5-fold increase of acupuncture usage for back pain from 1997 to 2002 is the increasing number of licensed acupuncturists in the United States. In 1997 there were 9,000 licensed acupuncturists and in 2002 there were more than 18,000 licensed acupuncturists.[25] It is possible that the doubling of licensed acupuncturists from 1997 to 2002 has allowed patients easier access to acupuncture care.[25] From 2002 to 2005 there was an additional 22% growth in the number of licensed acupuncturists (for a total of more than 22,000 in the United States[25]), suggesting that acupuncture use for back pain may be even more common today.

The doubling of the use of yoga/tai chi/qi gong for back pain from 1997 to 2002 could be explained by the general increase in the popularity of yoga in the United States. According to a 1998 national representative survey, more than 7 million Americans practiced yoga during the previous year.[26] By 2002 more than 10 million Americans practiced yoga during the previous year.[27] Increasingly, yoga classes are being offered in mainstream health clubs. In 1997, 400,000 health clubs offered yoga classes.[26] Four years later, 1.2 million health clubs, or 75% of all US fitness centers, offered yoga classes.[26] Similarly, the number of yoga instructors has increased between 2001 and 2006, from 2,000 to 14,000.[26]

Our analysis showed that 60% of the respondents who used the most common CAM modalities for back pain perceived a "great deal" of benefit. This is similar to previous national survey results that showed that 48% of respondents who used CAM for back or neck pain found CAM helpful.[4] Much of the behavioral health services research is based on Dr. Andersen's model,[12,13] which includes patients' perceived health benefit and consumer satisfaction as 2 of the 3 validated outcomes. Similarly, patients' perceptions are used in many validated instruments (eg, for lower back pain[28,29] and chronic pain[30]). Randomized controlled trials using patients' perceptions as a primary endpoint have been included in systematic reviews conducted by the Cochrane Collaborative.[31] Because of the format of the survey, we were not able to ascertain how helpful conventional medicine was in treating these respondents' back pain. However, in 1997 a nationally representative survey asked about the helpfulness of conventional medical physicians in treating back pain.[4] Twenty-seven percent of respondents felt that conventional medical doctors were very helpful.[4]

When determining the independent factors associated with the perceived benefit of CAM for back pain we were able to incorporate the majority of variables in the Behavioral Model of Health Services Use,[12,13] including predisposing demographic characteristics (eg, age and sex); predispos-

ing social structure (eg, education and ethnicity); predisposing health beliefs (eg, reasons for CAM use; see Table 3); enabling factors (eg, insurance and income); perceived health status by the individual (eg, self-reported health status); and personal health practices (eg, self-care). Unfortunately, the 2002 NHIS did not include variables for either diet or need. In a multivariable model that included the majority of covariates in the Behavioral Model of Health Services Use, we found that respondents were less likely to report great benefit if a conventional medical practitioner suggested CAM as treatment for back pain. Because the majority of conventional medical practitioners are not trained to apply CAM to patient care, it is possible that many conventional medical practitioners will first attempt to treat patients with conventional medicine. If conventional medicine fails then they would be more likely to refer patients to CAM providers. Because these patients may have pain that is less responsive to any treatment, referral to CAM by a conventional medical physician may have a worse outcome than unselected patients who self-refer directly for CAM therapies. It is also possible that patients derive more benefit when they make the decision to use CAM as opposed to following a physician recommendation. One study demonstrated that patients who participate in their own health have better outcomes.[32] Finally, it is also possible that conventional medical physicians refer their patients with the worst prognoses for improvement to CAM practitioners.

Our data show that 24% of respondents with back pain received a referral from their conventional medical practitioners for CAM whereas 60% of respondents perceived great benefit from CAM for back pain. Conventional medical practitioners traditionally refer patients with back pain to physical therapists, physiatrists, or orthopedic surgeons. This trend partially accounts for low referrals to CAM practitioners. A new clinical guideline for the diagnosis and treatment of low back pain from the American College of Physicians and the American Pain Society was published in *Annals of Internal Medicine* in October of 2007.[11] It recommends that conventional medical practitioners consider referrals for patients with back pain to CAM practitioners, specifically for acupuncture, massage therapy, spinal manipulation, and yoga for patients who do not improve with self-care.[11] If referrals increase in general, patients who are referred for CAM may be more similar to those who are not referred, possibly improving over time outcomes associated with referral.

There are several limitations to our study. First, we performed a secondary analysis and were not able to identify the larger population of patients with back pain, so we could not compare the users and nonusers of CAM treatments. Secondly, our outcome of perceived benefit of CAM for back pain was subjective. There were no objective markers to corroborate respondents' subjective reports. Thirdly, the CAM modalities of yoga, tai chi, and qi gong were grouped as one CAM modality and therefore we are not able to determine the perceived benefit of these individually. In addition, because of the design of the survey in our multivariate regression modeling, we were not able to adjust for 4 potential confounders of patients' improvement from back pain, eg, the type of back pain (acute, subacute, and chronic); the presence of radiculopathy; the level of pain; and prior history of back pain.[33–35] Finally, although we reported that yoga/tai chi/qi gong and acupuncture have perceived benefits similar to those of chiropractic and that massage had less benefit, these comparisons may have been affected by our small sample sizes of patients using yoga/tai chi/qi gong and acupuncture compared with patients using massage. It is likely that larger sample sizes of patients using yoga/tai chi/qi gong and acupuncture would have led to more precise comparisons. Because of all of these reasons, the conclusions we might draw about the efficacy of CAM for back pain and the comparison of efficacy between conventional medical treatment and CAM treatment for back pain are limited. However, our data are broadly generalizable because our analysis utilizes data from 95% of respondents using CAM for back pain.

Conclusion

Back pain is the second most common reason patients seek ambulatory medical care in the United States. CAM is used by 40% to 60% of the population yearly, and back pain is the most common medical condition for which people use CAM. Using a nationally representative survey, our analyses documented that the majority of respondents who used CAM for back pain perceived great benefit and identified specific factors associated with perceived benefit. We believe these observations support the need for future studies that include both

self-reported outcomes and observer-based, validated performance measures of patients seeking care for back pain from CAM providers.

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