ORIGINAL ARTICLE

Complementary and Alternative Medicine Use in the US Adult Low Back Pain Population

补充和替代医学在美国成人腰背痛人群中的应用

Uso de la medicina complementaria y alternativa en la población estadounidense adulta con lumbalgia

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ABSTRACT

Background: Many people suffering from low back pain (LBP) have found conventional medical treatments to be ineffective for managing their LBP and are increasingly turning to complementary and alternative medicine (CAM) to find pain relief. A comprehensive picture of CAM use in the LBP population, including all of the most commonly used modalities, is needed.

Study Objective: To examine prevalence and perceived benefit of CAM use within the US LBP population by limiting vs nonlimiting LBP and to evaluate the odds of past year CAM use within the LBP population

Methods: Data are from the 2012 National Health Interview Survey, Alternative Health Supplement. We examined a nationally representative sample of US adults with LBP (N=9665 unweighted). Multiple logistic regression was used to estimate the odds of past year CAM use.

Results: In all, 41.2% of the LBP population used CAM in the past year, with higher use reported among those with limiting LBP. The most popular therapies used in the LBP population included herbal supplements, chiropractic manipulation, and massage. The majority of the LBP population used CAM specifically to treat back pain, and 58.1% of those who used CAM for their back pain perceived a great deal of benefit.

Conclusion: The results are indicative of CAM becoming an increasingly important component of care for people with LBP. Additional understanding of patterns of CAM use among the LBP population will help health professionals make more informed care decisions and guide investigators in development of future back pain–related CAM research.

摘要

背景：许多有腰背痛 （Low Back Pain, LBP） 的人都发现常规药物治疗不足以管理其腰背痛，并越来越多地转向补充和替代医学 （Complementary and Alternative Medicine, CAM） 来疼痛缓解。需要全面描绘 CAM 在 LBP 人群中的使用情况，包括所有最常用的方式。

研究目标：通过限制性与非限制性 LBP 考察在美国 LBP 人群中使用 CAM 的普遍性和感知利益，同时评估去年在 LBP 人群中使用 CAM 的几率。

方法：数据来自于 2012 年国家健康访谈调查，替代健康补充。我们考察了美国成人 LBP 患者的全国代表性样本（N=9665，未加权）。使用多次逻辑回归估计去年使用 CAM 的几率。

结果：总体而言，41.2% 的 LBP 人群去年使用了 CAM，其中在限制性 LBP 患者中报告的使用率较高。LBP 人群中使用最多的疗法包括草药补充剂、整脊疗法和按摩。多数 LBP 人群使用了专用于治疗背痛的 CAM，在使用 CAM 治疗背痛者中，58.1% 感觉受益匪浅。

结论：结果表明，CAM 正成为 LBP 病患护理越来越重要的组成部分。进一步了解 CAM 在 LBP 人群中的使用方式将帮助卫生保健专业人员作出更加知情的护理决定，并指导研究者发展未来的背痛相关 CAM 研究。

SINOPSIS

Antecedentes: Muchas personas que sufren lumbalgia han descubierto que los tratamientos médicos convencionales no son eficaces para tratarla y están cambiando a la medicina complementaria y alternativa para encontrar el alivio a su dolor. Es necesario tener una imagen completa del uso de la medicina complementaria y alternativa en la población con lumbalgia, incluidas todas las modalidades usadas de forma más frecuente.

Objetivo del estudio: Investigar la prevalencia y el beneficio percibido a partir del uso de la medicina complementaria y alternativa en la población estadounidense con lumbalgia y evaluar las posibilidades del uso de la medicina complementaria y alternativa del año pasado dentro de la población con lumbalgia.

Métodos: Los datos provienen de la Encuesta nacional de entrevistas sobre salud de 2012, complemento de la salud alternativa. Examinamos una muestra representativa a nivel nacional de los adultos estadounidenses con lumbalgia (N=9665 sin ponderar). Se usó el modelo de regresión logístico múltiple para calcular las posibilidades del uso de la medicina complementaria y alternativa en el año pasado.

Resultados: En general, el 41,2 % de la población con lumbalgia usó la medicina complementaria y alternativa durante el último año, con un uso mayor comunicado entre aquellas personas con lumbalgia limitante. Los tratamientos más populares usados en la población con lumbalgia incluían los complementos a base de hierbas, la manipulación quiropráctica y el masaje. La mayor parte de la población con

lumbalgia utilizó la medicina complementaria y alternativa específicamente para tratar la lumbalgia y 58,1 % de los que utilizaron la medicina complementaria y alternativa para la lumbalgia notaron un beneficio muy grande.
Conclusión: Los resultados son indicativos de que la medicina complementaria y alternativa se está convirtiendo en un componente de tratamiento cada vez más importante para las personas con lumbalgia. El conocimiento complementario de pautas de uso de medicina complementaria y alternativa entre la población con lumbalgia ayudará a los profesionales sanitarios a tomar decisiones de tratamiento más informadas y a guiar a los investigadores en el desarrollo de la investigación futura en materia de medicina complementaria y alternativa relacionada con la lumbalgia.

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BACKGROUND

Low back pain (LBP) places a heavy burden on healthcare systems in the United States, costing approximately $100 billion a year in costs related to healthcare utilization. It is also the fifth most common reason for physician visits.[1-3] LBP also causes enormous losses to the country's economic efficiency, resulting in over 150 million lost workdays per year and $16 billion annually in lost productivity.[1,2] Back pain is one of the most common health complaints in the United States: Over 80% of adults in the US will experience it at some point during their lifetime.[4]

LBP is also a major cause of functional limitations and disability. People with back pain suffer from worse physical and mental health than people without back pain. Those with LBP are 3 times as likely to have limited functional ability and over 4 times as likely to experience serious psychological distress as people without.[5] A key goal of healthcare for patients with chronic back pain is to maximize their functional status so that they are able to carry out activities of daily living.[6] Accomplishing this goal may greatly increase a patient's quality of life and reduce their healthcare costs. Thus because functional status is highly valued by patients, it is an essential outcome of medical care, with measures of functional status having been found to predict healthcare expenditures, mortality, and quality of life for patients with pain.[7]

Many people suffering from LBP have found conventional medical treatments to be ineffective and unreliable for treating their pain. Therefore, due to dissatisfaction with conventional treatments for LBP, individuals suffering from LBP are increasingly turning to complementary and alternative medicine (CAM) to find relief.[8] CAM is a group of diverse medical and healthcare systems, practices, and products that are not generally considered part of conventional medicine.[9] A growing body evidence supports the use of CAM for improving back pain outcomes, with back pain being the most common condition for which patients use CAM.[10-12]

Although in recent years there has been growing interest in the use of CAM for the treatment of back pain, limited work has been done to investigate CAM use in a nationally representative sample of patients with back pain. Most surveys with information on CAM use within the back pain population are limited to select populations (eg, cancer or maternity patients) and convenience samples.[13,14] A study by Kanodia et al used a nationally representative population to examine CAM use in the back pain population. However, that study used 2002 data and focused only on the perceived benefit of CAM use for back pain. Another study by Wolsko et al used nationally representative 1997 data but looked at CAM use within a combined back and neck pain population.[15] No studies have examined CAM use in the back pain population by functional status. As CAM use for back pain in the US continues to grow, it is important to understand CAM usage patterns—especially among those whose back pain is causing functional limitations—in order to help guide future research, practice, and policy.

Primary Study Objective

The purpose of this study was to examine CAM use among adults with LBP in the United States using the most current nationally representative data. Specifically, the study objectives were to (1) compare characteristics of the US back pain population by low back pain status (limiting vs nonlimiting LBP), (2) describe the prevalence and patterns of CAM use by LBP status, (3) examine CAM use specifically for back pain and the perceived benefit of using CAM, and (4) estimate the odds of past year CAM use within the LBP population.

METHODS
Data Source

Data were from the 2012 National Health Interview Survey (NHIS). These data are the most current nationally representative data available on CAM health practices. The NHIS is a cross-sectional nationally representative household interview survey of the health and healthcare of the resident civilian noninstitutionalized US population.[16] Households are selected using a multistage area probability sample design using clustering and stratification. The final sample is drawn so that it is representative of the US population when sampling weights are used. The data collected by the NHIS vary from year to year. In 2012, the survey

included an Alternative Health Supplement. The 2012 Alternative Health Supplement collected information on the use of CAM modalities, insurance coverage, and out-of-pocket costs for visits to CAM providers, as well as reasons for and benefits of CAM use.[16]

Subjects and Sample Selection

In 2012, NHIS interviews were completed in 42,366 households, and a total of 43,323 adults were eligible for the sample adult questionnaire, including the Alternative Health Supplement. Data were collected for 34,525 adults, resulting in a response rate of 79.7%. The target population for this analysis was US adults with LBP (N=9665 unweighted). The US LBP population was identified according to respondents' answer to the following question in the 2012 NHIS: "During the past 3 months, did you have low back pain?" Individuals were instructed to report pain that had lasted a whole day or more instead of reporting fleeting or minor aches or pains. Furthermore, people suffering from LBP were instructed to answer if their back pain caused functional limitations. Our analysis compares differences between the "limiting LBP" and "nonlimiting LBP" groups.[16]

Primary Outcome Measures
Complementary and Alternative Medicine Use

The 2012 NHIS supplement on CAM asked about 18 specific types of CAM therapies. The 18 therapies were organized into 4 broad categories (alternative medicine systems, biologically based therapies, manipulative body therapies, and mind-body therapies) as classified in a 2007 National Center for Health Statistics report by Barnes et al.[17] The primary outcome for this analysis was CAM use. CAM use was operationalized in 3 ways: (1) a dichotomous *yes/no* indicator of any CAM use in last 12 months; (2) type of CAM use in last 12 months by a 4-category classification of CAM use; and (3) use of 18 specific types of CAM practices within the last 12 months.

Treatments Used for Back Pain and Their Effects on Back Pain

The secondary outcomes were (1) use of CAM treatment specifically for back pain and (2) the perceived benefit of CAM treatment. We distinguished whether people suffering from back pain were using therapies primarily for back pain or if CAM therapies were being used for other underlying or related conditions by identifying the condition treated with each CAM type. The perceived benefit of CAM was collected through a multiple-choice question that asked for the top 3 therapies used in the past year. CAM respondents were asked, "How much do you think [modality] helped [reason]?" Choices included "A great deal," "Some," "Only a little," "Not at all," "Refused," "Not ascertained," and "Don't know." Among the back pain population who used CAM for the purpose of treating their back pain, the perceived benefit of CAM use was determined

by combining responses for the level of benefit these respondents stated.

Covariates

Based on previous literature about CAM use and the variables available in the 2012 NHIS, covariates included in the analysis were (1) sociodemographic factors, (2) healthcare access, and (3) clinical factors. Sociodemographic factors included sex, age, race/ethnicity, nativity, marital status, poverty level, education, region, and employment. Four age groups were created: 18 to 29 years, 30 to 49 years, 50 to 64 years, and 65 years and older. Race/ethnicity was comprised of 5 groups: non-Hispanic white, non-Hispanic black, American Indian/Alaska Native (AIAN), Hispanic, and Asian. Nativity was defined as US born or foreign born. Marital status was classified into 3 categories: married, separated/divorced/widowed, and never married. Poverty status was made up of 2 groups: below 100% of the Federal Poverty Level (FPL) or above 100% FPL. Educational attainment was categorized into 4 groups—less than a high school education, high school diploma, some college, and college degree—as was regional location: Northwest, Midwest, South, and West. Employment status was categorized as employed or unemployed. Healthcare access was based on health insurance status and was categorized as insured or uninsured. Lastly, the clinical factors included were self-reported health (less then excellent or excellent) and back pain status: nonlimiting back pain vs limiting back pain. The analytic sample included all adults, ages 18 and older, who had back pain and complete data for the key variables.

Some variables in the NHIS contained missing data. Missing data for selected demographic characteristics (eg, education status) were imputed using the hot-deck procedure in Stata Statistical Software (StataCorp, College Station, Texas). Hot-deck imputation is a method to handle missing data. Assuming data are missing at random, the hot-deck procedure involves replacing missing values on variables of interest using observed values from similar respondents who have complete data.[18]

Analysis

First, we examined the extent to which background characteristics differed by LBP status (people with limiting LBP vs people without limiting LBP). Then we determined the prevalence of past year use of CAM therapies among US adults by LBP status, the prevalence of CAM use specifically for treating back pain, and the perceived benefit of CAM for the most commonly used CAM modalities (any CAM, massage, chiropractic manipulation, yoga/tai chi/qigong, and acupuncture). Crosstabulations and design-based *F*-tests were used to test for differences for these analyses using weighted data. We then estimated 4 separate multivariate logistic regression models to determine the odds of (1) any past year CAM use, (2) past year mas-

Table 1 Selected Characteristics (Weighted Percentage) Within a Low Back Pain (LBP) Population, Adults 18+ Years, 2012 National Health Interview Survey (NHIS)[a]

	Without Limiting LBP, %	With Limiting LBP, %	Total LBP, %	*P* value
Demographics				
Sex				
Male	44.6	43.3	44.2	.38
Female	55.4	56.7	55.8	
Age Group, y				
18-29	19.2	9.2	16.4	<.001
30-49	36.1	31.4	34.8	
50-64	27.2	35.2	29.4	
65+	17.4	24.2	19.3	
Race/ethnicity				
Non-Hispanic white	70.4	75.2	71.8	<.001
Non-Hispanic black	10.4	10.3	10.4	
AIAN	1.1	1.0	1.0	
Hispanic	14.2	10.4	13.1	
Asian	3.9	3.1	3.6	
Nativity status				
Foreign-born	15.8	11.3	14.6	<.001
US-born	84.2	88.7	85.4	
Marital status				
Married	53.5	53.2	53.4	<.001
Separated, divorced, widowed	22.1	30.0	24.3	
Never married	24.4	16.8	22.3	
Educational attainment				
Less than a high school diploma	15.1	18.7	16.1	<.001
High school diploma	27.2	30.0	28.0	
Some college	21.2	20.3	21.0	
College degree	36.5	31.1	35.0	
Insurance coverage				
Uninsured	17.0	14.2	16.2	.011
Insured	83.0	85.8	83.8	
Employment status				
Unemployed	42.0	61.2	47.4	<.001
Employed	58.0	38.8	52.6	
Poverty status				
Below 100% FPL	16.0	19.2	16.9	.002
Above 100% FPL	84.0	80.9	83.2	
Self-reported health				
Less than excellent	80.7	91.8	83.8	<.001
Excellent	19.3	8.2	16.2	
Census region				
1 South	36.2	38.8	36.9	.23
2 Midwest	22.9	22.6	22.8	
3 Northeast	17.9	15.8	17.3	
4 West	23.1	22.8	23.0	
Sample size				
Unweighted population	6835	2830	9665	
Weighted population	45,436,458	17,632,462	63,068,920	

[a] Demographic data from NHIS Person file and Sample Adult file 2012.
Abbreviations: AIAN, American Indian and Alaska Native; FPL, federal poverty level.

sage use, (3) past year chiropractic manipulation, and (4) past year yoga/tai chi/qigong use by LBP status (non-limiting vs limiting) and controlling for sociodemographic, access, and health characteristics. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) were estimated for each logistic model. All models were adjusted for age, race/ethnicity, sex, nativity status, self-reported health status, insurance status, and geographic region. All analyses used Stata Statistical Software and accounted for the NHIS's complex sampling design.

RESULTS

Sample Characteristics

Table 1 presents the characteristics of adults with back LBP, stratified by LBP status (limiting LBP vs non-limiting LBP). Overall, 29% of the LBP population had limiting back pain. Differences by back pain status were found for all demographic characteristics examined except for sex and geographic region. Adults with limiting back pain were more likely to be older, US-born, unemployed, have a lower level of education, and have lower self-reported health than those without.

Past Year Complementary and Alternative Medicine Use

Table 2 shows the prevalence of past year CAM use within the LBP population. Overall, 41.2% of the US LBP population reported CAM use for any reason in the past year. The individual CAM therapies that adults with LBP used most commonly included herbal therapies (21.3%), chiropractic manipulation (14.6%), massage (10.5%), and yoga/tai chi/qigong (10.1%). Adults with limiting back pain were significantly more likely to have utilized CAM in the past year than adults without limiting back pain (44.5% vs 39.9%, $P<.003$). Chiropractic manipulation (17.1% vs 13.9%, $P=.020$), acupuncture (3.1% vs 2.1%, $P=.020$), and herbal therapies (25.7% vs 19.6%, $P<.001$) were significantly more prevalent for those with limiting LBP, while movement therapies were more prevalent among those without limiting LBP (2.0% vs 1.1%, $P=.011$).

Complementary and Alternative Medicine Use for Back Pain

Table 3 presents LBP-specific CAM use and perceived benefit of CAM within the LBP population.

Table 2 Prevalence of Complementary and Alternative Medicine (CAM) Use Within the Past 12 Months, US Adults 18+ Years With Low Back Pain (LBP), 2012 National Health Interview Survey (NHIS)[a]

	Without Limiting LBP, %	With Limiting LBP, %	Total LBP, %	P value
Any CAM therapy	39.9	44.5	41.2	.003
Alternative medical systems	3.5	4.6	3.8	.026
Acupuncture	2.1	3.1	2.4	.020
Ayurveda	0.1	0.2	0.1	.51
Naturopathy	0.7	0.6	0.7	.81
Homeopathy	0.5	0.6	0.5	.85
Traditional healers	0.8		0.7	.49
Biologically based therapy	19.6	25.7	21.4	<.001
Herbal therapies	19.6	25.7	21.3	<.001
Manipulation-based therapy	21.2	22.9	21.7	.14
Chiropractic	13.9	17.1	14.6	.020
Massage	10.1	11.9	10.5	.13
Movement therapies	2.0	1.1	1.7	.011
Mind-body therapy	14.8	15.1	14.9	.78
Meditation	5.1	24.4	5.7	<.001
Guided imagery	2.4	22.2	2.5	.57
Progressive muscle relaxation	3.1	29.0	3.2	.40
Yoga	10.6	9.0	10.1	.06
Tai chi	1.7	1.6	1.6	.76
Qigong	0.5	0.5	0.5	.92
Biofeedback	0.2	0.4	0.3	.34
Hypnosis	0.2	0.3	0.2	.54
Unweighted sample	6835	2830	9665	
Weighted population	45,436,458	17,632,462	63,068,920	

[a] Data from NHIS Sample Adult, Alternative Health Supplement file 2012.

Table 3 Back Pain–specific Therapy Use Among Adults With Low Back Pain Who Used Complementary and Alternative Medicine (CAM) for Specific Conditions in the Past 12 Months and Perceived Benefit of CAM Use Among Adults Who Used CAM for Back Pain, Adults 18+ Years, 2012 National Health Interview Survey (NHIS)[a]

	Any CAM n=3892	Acupuncture n=261	Chiropractic Manipulation n=1363	Massage n=1017	Yoga/Qigong/Tai chi n=905
Used for back pain, %	21.1	19.5	40.7	22.2	8.1
	Any CAM n=796	**Acupuncture n=57**	**Chiropractic n=554**	**Massage n=220**	**Yoga/Qigong/Tai chi n=62**
Perceived benefit (of those who used CAM for back pain), %					
Great	58.1	64.6	62.0	54.7	53.2
Some	29.1	16.4	27.2	30.8	36.8
Only a little	8.0	11.8	6.1	9.4	8.1
Not at all	4.8	7.2	4.8	5.2	1.9

[a] Data from NHIS Sample Adult, Alternative Health Supplement file 2012.

Among adults with LBP who used CAM for any reason, 26.4% used CAM to treat their back pain. Similarly, 25.3% of adults with LBP who used acupuncture and 27.6% of those who used massage used those therapies to treat their back pain. Among adults with LBP who used chiropractic manipulation, approximately half (49.1%) used it to treat their back pain, while only 8.1% of the adults with LBP who used yoga, qigong, or tai chi, used the modalities in order to treat their LBP. Also presented in Table 3 is the perceived benefit of CAM use within the LBP population who used CAM to treat their back pain. Of those with LBP who used any CAM to treat their pain, 58.1% perceived CAM to have a "great" benefit while 4.4% believed it resulted in no benefit. Over half of LBP patients who used acupuncture (68.2%), chiropractic manipulation (62.6%), massage (55.9%) or yoga/qigong/tai chi (53%) also believed using those modalities resulted in a great benefit to their pain.

Odds of Past Year Complementary and Alternative Medicine Use

Table 4 shows the adjusted odds of past year CAM use by selected characteristics. People with limiting LBP had significantly higher odds of using any CAM, acupuncture, chiropractic manipulation, and massage in the past year as compared to those without nonlimiting LBP. However, those with limiting LBP had decreased odds of using yoga/tai chi/qigong (AOR: 0.7; 95% CI:0.6-0.8) compared to those experiencing nonlimiting LBP. For any past year CAM use and for any past year use of 4 specific CAM modalities, higher levels of educational attainment, income, insurance coverage, and self-reported health were positively associated with CAM use.

DISCUSSION

About a third of US adults with LBP suffered from back pain that resulted in functional limitations. Over 40% of the US LBP population reported using CAM in the past year. Findings showed that those with limiting back pain were more likely to use provider-based therapies such as acupuncture, massage, and chiropractic manipulation, while therapies requiring a higher level of mobility, such as movement therapies and yoga/tai chi/qigong, were more likely to be utilized by those with nonlimiting LBP. Presumably, those with functional limitations are more likely to have limited dexterity and are in more pain than those without limiting back pain, which may have contributed to their utilization of CAM therapies requiring less movement. In addition, adults with limiting LBP are more likely to have lower levels of self-efficacy and elevated levels of pain-related fear than adults without limiting back pain, which could result in their lower use of movement-based CAM therapies.[19]

The CAM therapies most commonly used among the LBP population were consistent with previous findings by Kanodia et al using 2002 NHIS data and by Wolsko et al. However, compared to previous findings, the prevalence of CAM use has grown significantly. Compared to data from 1997, yoga/tai chi/qigong for back pain has increased 8-fold, while acupuncture for back pain has more than doubled.[12,15] The increased use of acupuncture may be due to increased insurance coverage for acupuncture in the United States. According to a survey released in 2004 by the Kaiser Family Foundation, employer coverage for acupuncture increased by 14%, to 47%, between 2002 and 2004, making it the fastest growing CAM therapy to be included as a covered service for American workers with health insurance. The number of licensed acupuncturists in the United States has also grown; in 1997, there were 9000 licensed acupuncturists and in 2005 there were over 22,000. Thus this growth in acupuncturists may be allowing patients easier access to acupuncture care.[12] Similarly, the doubling of yoga/tai chi/qigong for back pain may be due to the growth in popularity for these practices—particularly yoga—in the United States. In 1997, only 400,000 health clubs offered yoga classes, but in 2002, over 1.2 million health clubs offered yoga classes.[20] Overall, chiropractic manipulation was the most prevalent CAM therapy used within the LBP population, with utilization

Table 4 Adjusted Odds Ratios (AORs) of CAM Use by Selected Characteristics, Adults 18+ years, 2012 National Health Interview Survey (NHIS)[a]

	Any CAM n=3892			Acupuncture n=261			Chiropractic Manipulation n=1363		
	AOR	95% CI	P value	AOR	95% CI	P value	AOR	95% CI	P value
Back pain status									
Nonlimiting low back pain	1.0			1.0			1.0		
Limiting low back pain	1.1	(1.0-1.2)	.005	1.4	(1.1-1.9)	.005	1.2	(0.1-2.3)	.021
Demographics									
Sex									
Male	1.0			1.0			1.0		
Female	1.2	(1.1-1.3)	<.001	1.5	(1.1-1.9)	.005	1.0	(0.9-1.1)	.93
Age group, y									
18-29	1.3	(1.2-1.5)	<.001	0.7	(0.4-1.1)	.11	1.1	(0.9-1.3)	.41
30-49	1.5	(1.3-1.7)	<.001	1.4	(1.0-1.9)	.07	1.4	(1.2-1.7)	<.001
50-64	1.3	(1.1-1.4)	<.001	1.0	(0.7-1.4)	.95	1.2	(1.0-1.4)	.038
65+	1.0			1.0			1.0		
Race/ethnicity group									
Non-Hispanic white	1.0			1.0			1.0		
Non-Hispanic black	0.4	(0.3-0.5)	<.001	0.5	(0.3-0.8)	.006	0.3	(0.2-0.4)	<.001
AIAN	0.9	(0.6-1.2)	.43	1.5	(0.6-3.6)	.42	1.0	(0.6-1.6)	.96
Hispanic	0.5	(0.5-0.6)	<.001	1.2	(0.9-1.7)	.25	0.5	(0.4-0.6)	<.001
Asian	1.3	(0.7-2.1)	.46	2.8	(1.9-5.9)	.009	0.5	(0.1-1.1)	.05
Nativity status									
Foreign born	1.0			1.0			1.0		
US born	1.3	(1.2-1.5)	<.001	0.6	(0.5-0.8)	.001	1.5	(1.3-1.8)	<.001
Marital status									
Married	1.0			1.0			1.0		
Separated, divorced, widowed	0.8	(0.7-0.9)	<.001	0.8	(0.6-1.1)	.26	0.8	(0.7-0.9)	<.001
Never married	0.9	(0.8-1.0)	.08	1.1	(0.8-1.4)	.75	0.7	(0.6-0.9)	<.001
Educational attainment									
<High school diploma	1.0			1.0			1.0		
High school diploma	1.6	(1.4-1.8)	<.001	1.5	(0.9-2.5)	.12	1.8	(1.5-2.3)	<.001
Some college	2.7	(2.4-3.2)	<.001	2.0	(1.2-3.3)	.007	2.4	(1.9-3.0)	<.001
College degree	4.4	(3.8-5.0)	<.001	3.5	(2.3-5.5)	<.001	3.2	(2.7-4.0)	<.001
Insurance coverage									
Uninsured	1.0			1.0			1.0		
Insured	1.3	(1.1-1.4)	<.001	1.2	(0.8-1.8)	.22	1.5	(1.2-1.7)	<.001
Employment status									
Unemployed	1.0			1.0			1.0		
Employed	1.7	(1.5-1.8)	<.001	1.4	(1.1-1.8)	.007	1.9	(1.7-2.2)	<.001
Poverty status									
Below 100% FPL	1.0			1.0			1.0		
Above 100% FPL	2.1	(1.9-2.3)	<.001	1.8	(1.2-2.5)	.002	2.5	(2.1-3.0)	<.001
Self-reported health									
Less than excellent	1.0			1.0			1.0		
Excellent	1.6	(1.4-1.8)	<.001	1.5	(1.1-2.1)	.006	1.5	(1.3-1.8)	<.001
Census region									
1 South	1.0			1.0			1.0		
2 Midwest	1.8	(1.6-2.0)	<.001	1.9	(1.2-2.9)	.003	2.1	(1.8-2.5)	<.001
3 Northeast	1.4	(1.2-1.6)	<.001	2.6	(1.7-3.9)	<.001	1.3	(1.1-1.5)	.009
4 West	2.3	(2.1-2.6)	<.001	4.4	(3.1-6.3)	<.001	1.7	(1.5-2.0)	<.001

Table 4 (cont) Adjusted Odds Ratios (AORs) of CAM Use by Selected Characteristics, Adults 18+ years, 2012 National Health Interview Survey (NHIS)[a]

	Massage, n=1017			Yoga/Qigong/Tai Chi, n=993		
	AOR	95% CI	*P* value	AOR	95% CI	*P* value
Back pain status						
Nonlimiting back pain	1.0			1.0		
Limiting back pain	1.3	(1.1-1.5)	<.001	0.7	(0.6-0.9)	<.001
Demographics						
Sex						
Male	1.0			1.0		
Female	1.5	(1.3-1.7)	<.001	2.1	(1.8-2.4)	<.001
Age group, y						
18-29	1.5	(1.2-1.9)	.001	4.4	(3.4-5.6)	<.001
30-49	2.2	(1.8-2.7)	<.001	3.4	(2.7-4.2)	<.001
50-64	1.6	(1.3-2.0)	<.001	1.7	(1.4-2.2)	<.001
65+	1.0			1.0		
Race/ethnicity						
Non-Hispanic white	1.0			1.0		
Non-Hispanic black	0.6	(0.5-0.7)	<.001	0.5	(0.4-0.7)	<.001
AIAN	1.2	(0.7-2.0)	.47	0.7	(0.4-1.3)	.27
Hispanic	0.8	(0.6-0.9)	.010	0.6	(0.5-0.8)	<.001
Asian	1.0	(0.6-2.3)	.84	2.0	(0.9-3.6)	<.001
Nativity status						
Foreign born	1.0			1.0		
US born	1.0	(0.8-1.1)	.63	1.1	(1.0, 1.4)	.15
Marital status						
Married	1.0			1.0		
Separated, divorced, widowed	0.8	(0.7-0.9)	<.001	0.8	(0.7-1.0)	.011
Never Married	1.1	(0.9-1.3)	.36	1.7	(1.4-1.9)	<.001
Educational attainment						
<High school diploma	1.0			1.0		
High school diploma	1.8	(1.3-2.4)	<.001	1.8	(1.2-2.5)	.002
Some college	3.7	(2.8-5.0)	<.001	4.6	(3.3-6.3)	<.001
College degree	6.1	(4.6-7.9)	<.001	9.2	(6.8-12.5)	<.001
Insurance coverage						
Uninsured	1.0			1.0		
Insured	1.4	(1.1-1.7)	.001	1.0	(0.8-1.2)	.98
Employment status						
Unemployed	1.0			1.0		
Employed	2.1	(1.9-2.5)	<.001	2.1	(1.8-2.4)	<.001
Poverty status						
Below 100% FPL	1.0			1.0		
Above 100% FPL	2.4	(2.0-2.9)	<.001	1.7	(1.4-2.1)	<.001
Self-reported health						
Less than excellent	1.0			1.0		
Excellent	1.7	(1.4-2.0)	<.001	2.2	(1.9-2.6)	<.001
Census region						
1 South	1.0			1.0		
2 Midwest	1.4	(1.1-1.7)	.001	1.3	(1.1-1.6)	.64
3 Northeast	1.3	(1.1-1.6)	.008	1.5	(1.1-1.8)	<.001
4 West	1.9	(1.6-2.3)	<.001	2.0	(1.7-2.4)	.003

[a] Demographic data from NHIS Person file and Sample Adult file 2012.
Abbreviations: AIAN, American Indian and Alaska Native; CI, confidence interval; FPL, federal poverty level.

remaining consistent compared to past studies.[15]

Our findings indicate that the majority of respondents (58.1%) who used CAM in the past year for back pain perceived a "great deal" of benefit. This is similar to results from previous studies.[12,15] Though it was not possible to ascertain the perceived benefit of conventional medical treatments on LBP through this analysis, the high levels of perceived benefit of CAM support the need for additional investigation into the mechanisms by which CAM approaches may help relieve LBP, studying the efficacy and safety of CAM therapies in specific back pain populations or healthcare settings, and continued randomized trials with higher levels of methodological rigor.[21]

Similar to general population patterns, those with lower self-reported health used CAM less than those with higher self-reported health statuses. However, those with limiting LBP had higher CAM use than those with nonlimiting LBP. These findings suggest that while those with overall poorer health are not seeking CAM treatment options as widely as those who are healthier, people facing limiting back pain are turning to CAM as an option for their health management at a higher level than those with less severe LBP. For people with severe LBP, turning to CAM may seem a better alternative due to its more conservative, noninvasive nature as compared to more conventional medical treatments such as epidural steroid injections, surgeries, and prescriptive medications—all which may carry higher risks than CAM treatments.[22] Alternatively, those with severe pain may have exhausted all other possibilities and may be looking for any possibility of relief. It may be important for policymakers to consider methods of improving access to CAM for individuals with poor health because of the potential of noninvasive, low-risk CAM options to manage their health.[23]

There are several study limitations. First, responses to the CAM use questions were self-reported and limited by survey respondents' willingness and ability to report CAM use and LBP status accurately. Since CAM use and LBP status were based on self-report, there was a potential for recall bias, which may have resulted in an underestimation or overestimation of CAM use and limiting LBP status. Additionally, because the recall periods differed for these 2 key variables, there may be some people for whom CAM use occurred before the reported LBP experience. However, we did look at CAM users to identify and distinguish those who used CAM specifically for their LBP. Moreover, the question on functional limitations combined limitations due to back or neck pain. It is possible that some proportion of our population was limited due to neck pain rather than back pain. Second, the outcome of perceived benefit of CAM for back pain was subjective. It is possible that those who answered these questions were those who responded most favorably to CAM treatment. Third, the NHIS alternative health supplement is collected only every 5 years, and a single year of NHIS data restricts the sample

sizes for some subgroup analyses. For example, we were unable to include individual Asian race/ethnicity subgroups in our analysis due to small sample sizes and instead had to create an aggregate Asian group. Last, the NHIS did not include information on different types of LBP (subacute, acute, and chronic), and instead our analysis focused on differences of CAM use by limiting LBP vs nonlimiting LBP groups.

A major strength of this study was that it used a large, nationally representative survey of the US adult population with LBP and included a comprehensive list of CAM therapies. By examining CAM usage in a nationally representative sample, findings will be helpful in facilitating future practice, policy, and research recommendations involving CAM for treating LBP in the United States. Our results indicate it may be useful for policymakers to develop strategies to improve access to CAM services for the LBP population, especially for those with poor health and/or limiting back pain. Also due to the high perceived benefit of using CAM for back pain, it may be beneficial for healthcare professionals to be aware of the potential CAM types their patients may be using and be able to educate LBP patients about the CAM services that could be used to help manage their pain. In addition, future research should examine other validated self-reported outcomes within this population, such as back pain intensity, disability, and mobility, in order to determine how CAM therapies may be useful as part of a complementary and integrative healthcare approach to the management of LBP.

CONCLUSION

CAM therapies are becoming an increasingly important component of care for people with LBP. A large proportion of the LBP population—over 40%—used some form of CAM in the past year, with higher use reported among those with limiting back pain. Among the most popular therapies used in the LBP population included herbal therapies, chiropractic manipulation, and massage. Differences in specific therapies used were found by LBP status; patients with limiting pain were more likely to use herbal therapies, acupuncture, and chiropractic manipulation, and patients with nonlimiting pain were more likely to use movement therapies. The majority of the LBP population used CAM specifically to treat back pain, and most adults who used CAM for back pain perceived a great deal of benefit. Thus CAM use appears to be an important and growing part of healthcare for the back pain population, and these results support the need for large pragmatic trials of CAM therapies for LBP in the United States. Additional understanding of patterns of CAM use among the LBP population will help healthcare professionals make more informed care decisions, help policymakers to create frameworks for future policy implementation, and guide investigators in the development of future back pain–related CAM research.

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