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### Acupuncture Use in the United States: Who, Where, Why, and at What Price?

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# Acupuncture Use in the United States: Who, Where, Why, and at What Price?

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*Despite the increase in acupuncture uses and greater than ever before interest of funding agencies to fund biomedical research in acupuncture, little is known about the profile of acupuncture users. We examined who these individuals are, where they reside, why they use acupuncture, and what price they pay. The increased use and high costs associated with each acupuncture visit poses questions to health care insurers regarding its coverage. Profiling will help conventional providers identify the segment of the population who are more likely to use acupuncture and educate them on the possible risks and benefits of using it with conventional medicine.*

*KEYWORDS* alternative medicine, acupuncture, complementary medicine, utilization, profiling

## INTRODUCTION

Over the years, there has been a steady increase in the use of complementary and alternative medicine (CAM) among the U.S. population (Coulter & Willis, 2004). CAM includes diverse and abundant practices such as acupuncture,

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chiropractic care, naturopathy, ayurveda, and homeopathy. CAM therapies are known as complementary medicine when used with conventional medicine, and are known as alternative medicine when used alone (Floyd, 2006). According to the 2007 National Health Interview Survey (NHIS), about 34% of adults and 12% of children have used some form of CAM. An estimated \$33.9 billion out-of-pocket expenses per year are reported for CAM (U.S. Department of Health and Human Services, 2008; National Certification Commission for Acupuncture and Oriental Medicine, 2009).

One of the CAM therapies that have received particular attention during the last decade is acupuncture. It is one of the fastest growing CAM therapies in the United States (Burke, Upchurch, Claire, & Chyu, 2006) and has its origin in traditional Chinese medicine (Kaptchuk, 2002; Vickers & Zollman, 1999). The National Certification Commission for Acupuncture and Oriental Medicine reported a 32% increase in the number of visits to acupuncturists between 2002 and 2007 (National Certification Commission for Acupuncture and Oriental Medicine, 2009). The National Institutes of Health's (NIH) Research Portfolio Online Reporting Tools database lists about 73 federally funded biomedical research studies in acupuncture (National Institutes of Health, 2012). The NIH consensus panel has reported acupuncture as an adjunct treatment or an acceptable alternative included in a comprehensive management program for a variety of conditions (Burke et al., 2006; National Institutes of Health, 1997). There is a growing body of literature on the efficacy of acupuncture treatment for a variety of conditions, especially musculoskeletal conditions, headaches, and asthma (Burke et al., 2006; National Institutes of Health, 1997).

Despite the increase in acupuncture uses and greater than ever before interest of funding agencies to fund biomedical research in acupuncture, little is known about the profile of individuals who use acupuncture. Profiling, defined as the "description of the salient characteristics of the best customers" (Ratner, 2011, p. 205), is a useful tool that can offer health care providers information about the type of individuals they serve and consequently help them focus on how to improve their services to better suit these types of individuals. Given the pressure to provide integrative medicine and high quality patient-centered care (Maizes, Rakel, & Niemiec, 2009), knowing the profile of acupuncture users will guide acupuncturists to customize their skills and services to meet the needs of users. Additionally, it will help allopathic providers to identify the segment of the population that are more likely to seek this kind of CAM therapy and educate them with the possible risks and benefits of using acupuncture with conventional allopathic medicine. Furthermore, getting a clear picture of acupuncture users might lead to better and wider insurance coverage for acupuncture services.

Prior studies have profiled users of acupuncture in the United Kingdom (McPheason, Sinclair-Lian, & Thomas, 2006), minority and underserved users of acupuncture in the United States (Highfield et al., 2012), U.S. women

who have used acupuncture (Upchurch et al., 2008), and users of acupuncture in the United States during the past 12 months based on data collected prior to 2002 (Burke et al., 2006). The studies that analyzed samples from the United States are limited due to the fact that they either focused on specific groups from the U.S. population (Highfield et al., 2012; Upchurch et al., 2008), or they studied people who used acupuncture over a limited time-frame (Burke et al., 2006). As a result, we do not have a true picture of acupuncture users in the United States. The primary purpose of this study is to address these limitations by profiling all adults who have ever used acupuncture in their lifetime based on the 2012 NHIS. Specifically, we examined who these individuals are, where they reside, why they use acupuncture, and what price they pay to get this treatment. In a secondary analysis, we identified the aforementioned characteristics from a sample of individuals who reported that they had used acupuncture in the past 12 months (recent users) to see if these results were any different.

## THEORETICAL FRAMEWORK

We used the behavioral model of health care utilization to identify the factors associated with acupuncture utilization. This model has previously been used to examine the correlates of CAM utilization as well as acupuncture (Brown, Barner, Bohman, & Richards, 2009; Upchurch et al., 2008). Upchurch and colleagues used the behavioral model of health care utilization to examine acupuncture use among U.S. women, while Brown and colleagues examined the utilization of CAM among African Americans. According to the model, individuals' health care utilization behavior is a function of their predisposing, enabling, and need-related factors (Andersen, 1995). Factors such as age, gender, race/ethnicity, and education level, which predispose individuals' decision to use acupuncture, are known as predisposing factors. Enabling factors are those that have the potential to facilitate an individual's ability to utilize acupuncture services. Factors such as annual income, having any health insurance, having a personal physician, place of birth, marital status, and region of residence are enabling factors. Finally, factors that determine the need for acupuncture treatment such as health status or medical conditions are need-related factors (Andersen, 1995). Overall, health status, arthritis conditions, cardiovascular conditions, stroke, and depression/anxiety are some of the need-related factors included in our model.

## METHODS

### Data

This is a retrospective cross-sectional study based on the 2012 NHIS, which is a population-based random sample of noninstitutionalized population

(The Centers for Disease Control and Prevention, 2012). Study respondents are 18 years old or older. Data were collected using a computer-assisted personal interviewing method. The NHIS questionnaire has two parts: a core section and a supplement section. The core section contains the household, family, adult, and child components providing sociodemographic, health care utilization, and behavior data. The questions in the supplement section focus on topics such as CAM, and new and emerging health issues. The CAM supplement collects information on acupuncture and other alternative treatments. In 2012, the NHIS sample size for adults who responded to the CAM supplement questionnaire consisted of approximately 34,525 noninstitutionalized civilians residing in the United States (The Centers for Disease Control and Prevention, 2012). We merged the adult CAM supplement section with the person-level file from the NHIS family core questionnaire to create a unique data set with information on adults' acupuncture use and their sociodemographic characteristics as well as their health conditions. Our analysis included a final sample of 27,692 U.S. adults after we excluded individuals with missing data related to the variables of interest.

### Variables and Measures

The outcome variable acupuncture utilization was determined by assessing if individuals ever utilized acupuncture services (yes/no). The explanatory variables were predisposing factors (i.e., age, race/ethnicity, gender, and education level), enabling factors (i.e., income, health insurance, personal physician, place of birth, marital status, and region of residence), and need-related factors (i.e., overall health status and health conditions, including arthritis conditions, cardiovascular conditions, stroke, hypertension, diabetes, cancer, breathing/lung problems, depression/anxiety, and nervous system conditions).

Age groups were categorized as 18 to 44 years, 45 to 64 years, and 65 years or older. The variable race/ethnicity was categorized as White, African American, Hispanic, Asian, and other (Native American, Alaskan, multiracial). We included both genders (male and female) in our model. Education level was categorized as those who had high school education or less, those who had some college education, and those who had a bachelor's degree or higher.

Income was categorized as individuals who made less than \$55,000, those who made \$55,000 to \$74,999, and those who made equal to or greater than \$75,000. About 45% of the sample had missing information on income. Hence, we decided to include a fourth category as "undisclosed" for individuals who did not disclose their annual income. Health insurance was categorized as the presence of any type of health insurance and not having any health insurance. Place of birth was categorized as U.S. born and non-U.S. born. Marital status was categorized as married and others. The variable personal physician was categorized as individuals who had one and those who did not have one. Region of residence was categorized as Northeast, Midwest, South, and West.

Overall health status was categorized as good and poor. The health conditions included in the model were arthritis conditions, cardiovascular conditions, hypertension, diabetes, cancer, breathing/lung conditions, depression/anxiety, and nervous system conditions. Health conditions were dichotomized, indicating whether the respondents had each one of these conditions or did not have one.

## Data Analyses

The Statistical Package for the Social Sciences (IBM SPSS Inc., Chicago, IL) version 19.0 for Windows was used for all statistical analyses and the sample was weighted based on 2010 U.S. census data. As NHIS has a complex sample design, the final calculated weights that we used in our analysis were the product of design weight and poststratification weights. Univariate analyses were performed to explore the characteristics of the population who have ever used acupuncture in their life. The independent variables were tested for any multicollinearity using Cramer's V correlation. We used multivariate logistic regression models to examine the correlates of acupuncture utilization. Further, we reported the reasons for acupuncture use and the average price incurred.

## RESULTS

Table 1 shows the descriptive characteristics of the sample. Of the 27,692 adults in the sample, about 6.7% (12.7 million) have used acupuncture in their lifetime. With respect to predisposing factors, 21% of the sample was age 65 and older, 55% were female, 70% were White, and 30% had a bachelor's degree or higher education. With respect to enabling factors, about 39% of the respondents had an annual household income of less than \$55,000, 10% did not have any health insurance, 81% had a personal physician, 15% were born outside the United States, and 56% were married. The majority (36%) of the respondents resided in the southern United States. With respect to need factors, 14% of the sample reported poor health status, 4% reported arthritis conditions, less than 1% reported cardiovascular conditions or cancer, and slightly more than 2% individuals reported hypertension, diabetes, or depression/anxiety.

The correlation matrix in Table 2 did not reveal any multicollinearity problem. The minimum and maximum correlations observed among the independent variables were 0 and 0.60, respectively.

Table 3 shows the results from the weighted logistic regression identifying the factors associated with acupuncture use. Adults in the 18 to 44 age group were less likely ( $OR=0.53$ ,  $p<.05$ ) to use acupuncture compared to older adults ( $\geq 65$  years). Males were less likely to utilize acupuncture



**TABLE 1** Sociodemographic Characteristics of Individuals From 2012 National Health Interview Survey ( $N = 27,692$ )

Factors	Variables	Measures	Frequency (%)
Predisposing Factors	Age (in years)	18–44	43.0
		45–64	36.5
		≥65	20.5
	Gender	Male	45.5
		Female	54.5
	Race	White	70.2
		African American	11.6
		Hispanic	12.4
		Asian	5.0
		Other	0.8
Education	≤High school	38.2	
	Some college	31.4	
	Bachelor's degree or higher	30.2	
Enabling Factors	Annual income	<\$55,000	38.6
		\$55,000–\$74,999	7.0
		≥\$75,000	9.2
		Undisclosed	45.2
	Health insurance	Yes	90.4
		No	9.6
	Personal physician	Have one	81.4
		None	18.6
	Place of birth	U.S. born	84.9
		Non-U.S. born	15.1
Marital status	Married	55.8	
	Others	44.2	
Region	Northeast	19.5	
	Midwest	23.2	
	South	35.5	
	West	21.8	
Need-Related Factors	Health status	Good	86.4
		Poor	13.6
	Arthritis conditions	Yes	4.2
		No	95.2
	Cardiovascular Conditions	Yes	0.6
		No	99.4
	Stroke	Yes	1.0
		No	99.0
	Hypertension	Yes	2.4
		No	97.6
	Diabetes	Yes	2.3
		No	97.7
	Cancer	Yes	0.8
		No	99.2
	Breathing/lung problems	Yes	1.7
		No	98.3
	Depression/anxiety	Yes	2.4
No		97.6	
Nervous system conditions	Yes	1.8	
	No	98.2	

Note. Percentages weighted to U.S. population estimates.

**TABLE 2** Correlation Matrix (Cramer's V Correlation Coefficient) for Independent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 Age	1																				
2 Race	.15	1																			
3 Gender	.04	.04	1																		
4 Education	.13	.23	.03	1																	
5 Income	.44	.11	.17	.34	1																
6 Health insurance	.19	.16	.00*	.13	.15	1															
7 Place of birth	.05	.60	.01	.10	.02	.11	1														
8 Marital status	.10	.16	.10	.11	.12	.06	.08	1													
9 Personal physician	.16	.13	.05	.06	.07	.20	.08	.06	1												
10 Region	.03	.34	.02	.07	.07	.06	.16	.02	.06	1											
11 Health status	.18	.11	.01*	.21	.24	.01	.00*	.07	.04	.06	1										
12 Arthritis conditions	.19	.06	.05	.10	.19	.04	.03	.08	.05	.03	.28	1									
13 Cardio-vascular conditions	.06	.01	.00*	.03	.07	.01	.00*	.03	.01	.00*	.13	.17	1								
14 Stroke	.09	.03	.01*	.05	.10	.02	.01	.01	.02	.02	.116	.10	.08	1							
15 Hypertension	.13	.08	.01	.09	.15	.02	.00*	.06	.03	.05	.27	.36	.21	.18	1						
16 Diabetes	.12	.04	.00*	.08	.14	.02	.00*	.03	.03	.04	.28	.25	.17	.14	.42	1					
17 Cancer	.07	.02	.00*	.02	.07	.02	.01	.01	.02	.00*	.14	.09	.08	.06	.13	.10	1				
18 Breathing and lung problem	.08	.03	.00*	.06	.12	.02	.02	.03	.04	.02	.01	.22	.22	.14	.08	.24	.18	.08	1		
19 Depression	.06	.03	.02	.07	.12	.00*	.02	.08	.02	.01	.21	.19	.13	.06	.23	.16	.06	.20	.20	1	
20 Nervous system disorders	.04	.02	.01	.04	.09	.01	.03	.03	.02	.00*	.17	.12	.14	.05	.13	.11	.06	.11	.16	.16	1

\*Correlations not significant at  $p > .05$ .

**TABLE 3** Results From the Weighted Logistic Regression for U.S. Individuals Who Ever Used Acupuncture ( $N=27,692$ )

Factors	Variables (Reference category)	Measures	OR (95% CI)
Predisposing Factors	Age ( $\geq 65$ years)	18–44	0.53 (0.44–0.63)*
		45–64	0.96 (0.81–1.13)
	Gender (Female)	Male	0.61 (0.54–0.69)*
		Race (White)	African American
	Hispanic		0.84 (0.67–1.05)
	Asian		1.17 (0.89–1.54)
Other	0.88 (0.45–1.73)		
Enabling Factors	Education (Bachelor's degree or higher)	$\leq$ High school	0.33 (0.28–0.40)*
		Some college	0.61 (0.53–0.70)*
	Annual income ( $\geq$ \$75,000)	<\$55,000	0.77 (0.63–0.95)*
		\$55,000–\$74,999	0.72 (0.56–0.93)*
	Health insurance (No)	Undisclosed	0.74 (0.59–0.92)*
		Yes	1.02 (0.78–1.32)
	Personal physician (No)	Have one	1.14 (0.93–1.40)
		Place of birth (Non-U.S. born)	US born
	Marital status (Others)		Married
		Region (West)	Northeast
Midwest	0.45 (0.37–0.54)*		
South	0.33 (0.27–0.40)*		
Need-Related Factors	Health status (Good)	Poor	0.76 (0.60–0.97)*
		Arthritis conditions (No)	Yes
	Cardiovascular conditions (No)		Yes
		Stroke (No)	Yes
	Hypertension (No)	Yes	0.69 (0.43–1.11)
	Diabetes (No)	Yes	0.50 (0.32–0.80)*
	Cancer (No)	Yes	1.11 (0.62–1.99)
	Breathing /lung problems (No)	Yes	1.30 (0.63–2.69)
	Depression/anxiety (No)	Yes	1.25 (0.85–1.81)
Nervous system conditions (No)	Yes	2.47 (1.68–3.63)*	

Note. Sample weighted to U.S. population estimates. OR = odds ratio; 95% CI denotes confidence interval. \* $p < .05$ .

( $OR=0.61$ ,  $p < .05$ ) than females. Compared to Whites, African Americans were less likely ( $OR=0.58$ ,  $p < .05$ ) to use acupuncture. Individuals with high school education or less ( $OR=0.33$ ,  $p < .05$ ) and with some college ( $OR=0.61$ ,  $p < .05$ ) were less likely to use acupuncture than those who had bachelors' and higher degrees. Individuals who did not disclose their income ( $OR=0.74$ ,  $p < .05$ ), those with an annual income of less than \$55,000 ( $OR=0.77$ ,  $p < .05$ ), and those with an annual income of \$55,000 to \$74,999 ( $OR=0.72$ ,  $p < .05$ ) were less likely to use acupuncture than individuals with annual income of \$75,000 or higher. Compared to individuals residing in the Western United States, individuals in other U.S. regions were less likely to use acupuncture: Northeast ( $OR=0.61$ ,  $p < .05$ ), Midwest ( $OR=0.49$ ,  $p < .05$ ), and South ( $OR=0.51$ ,  $p < .05$ ). Individuals with an overall poor health status ( $OR=0.76$ ,  $p < .05$ ) and diabetes ( $OR=0.50$ ,  $p < .05$ ) were less likely to use acupuncture compared to individuals with an overall

good health status and those who did not have diabetes, respectively. Individuals with arthritis conditions ( $OR = 1.56, p < .05$ ) and nervous system conditions ( $OR = 2.47, p < .05$ ) were more likely to use acupuncture than individuals who did not have these health conditions.

Further, we examined the reasons for acupuncture use. Of the 1,999 individuals who reported acupuncture use, 351 individuals responded to the item on the reasons for acupuncture utilization. The major reason identified for acupuncture use was conventional allopathic medical treatment was not effective for the individuals' specific health issue (33%). About 30% used acupuncture for general health/wellness as well as disease prevention; 27% used it because friends and family members suggested the therapy; and 21% used it as their health care provider recommended it. About 7% reported conventional medical treatment as too expensive. The average price per visit was \$94 and 67% of the sample visited an acupuncturist between 2 and 10

**TABLE 4** Results From Weighted Logistic Regression for Recent Users of Acupuncture ( $N = 27,692$ )

Factors	Variables (Reference category)	Measures	OR (95% CI)
Predisposing Factors	Age ( $\geq 65$ years)	18-44	0.73 (0.53-1.01)
		45-64	0.82 (0.59-1.15)
	Gender (Female)	Male	0.48 (0.38-0.60)*
		Race (White)	African American
	Hispanic		0.77 (0.53-1.11)
	Asian		1.33 (0.84-2.09)
	Other		0.13 (0.01-1.09)
Education (Bachelor's degree or higher)	$\leq$ High school		0.31 (0.22-0.43)*
	Some college	0.58 (0.44-0.75)*	
Enabling Factors	Annual income ( $\geq$ \$75,000)	<\$55,000	0.64 (0.44-0.95)*
		\$55,000-\$74,999	0.74 (0.46-1.18)
	Health insurance (No)	Undisclosed	0.51 (0.34-0.78)*
		Yes	0.77 (0.49-1.21)
	Personal physician (No)	Have one	1.60 (1.13-2.27)*
		Place of birth (Non-U.S. born)	U.S. born
	Marital status (Others)		Married
		Region (West)	Northeast
	Midwest		0.37 (0.28-0.50)*
	South		0.30 (0.22-0.42)*
Need-Related Factors	Health status (Good)	Poor	0.64 (0.44-0.94)*
		Arthritis conditions (No)	Yes
	Cardiovascular conditions (No)		Yes
		Stroke (No)	Yes
	Hypertension (No)	Yes	0.43 (0.21-0.90)*
	Diabetes (No)	Yes	1.07 (0.46-2.47)
	Cancer (No)	Yes	1.39 (0.47-4.07)
	Breathing/lung problems (No)	Yes	0.66 (0.25-1.72)
	Depression/anxiety (No)	Yes	0.99 (0.52-1.90)
	Nervous system conditions (No)	Yes	3.10 (1.68-5.71)*

Note. Sample weighted to U.S. population estimates. OR = odds ratio; 95% CI = confidence interval.

\* $p < .05$ .

times. The majority obtained information about the therapy from the Internet (17%); followed by 8% from scientific articles, magazines, and books; and around 3% from television/radio or health food stores. Further, back pain (23%) was reported as the major health condition for which individuals sought acupuncture.

We conducted an additional logistic regression to investigate the determinants of acupuncture use among individuals who used it during the past 12 months (recent users). The results of the analysis are summarized in Table 4. About 3.1 million (1.6%) U.S. adults used acupuncture within the 12 months prior to the survey. The results with respect to age, having a personal physician and certain health conditions such as arthritis, hypertension, and diabetes, were different from the sample of individuals who ever used acupuncture. Our analysis indicated that those who had a personal physician were more likely ( $OR=1.60$ ,  $p<.05$ ) to use acupuncture than individuals who did not have one. The variables age, having arthritis, and having diabetes were not significant predictors of acupuncture use.

## DISCUSSION

We profiled acupuncture users in a sample of the U.S. adult population and examined their reasons for using acupuncture. We found age, race, gender, education, region of residence, overall health status, and having health conditions such as arthritis, diabetes, and nervous system disorders to be predictors of acupuncture use. The three major reasons for acupuncture use were: first, conventional medical treatment was not effective for respondents' specific health problem; second, acupuncture was used for general health/wellness and disease prevention; and finally, respondents used acupuncture based on the recommendations from family and friends.

### Individuals Who Used Acupuncture

We found that older adults use acupuncture more than their younger counterparts. This suggests that as individuals age, they tend to pay more attention to issues related to their health care and place more value on their health (Zanjani, Schaie, & Willis, 2006). In addition, elderly people have multiple morbidities that require the use of several health services. Hence, they may be more likely to utilize acupuncture services. On the contrary, among the individuals who have used acupuncture within the last 12 months prior to the survey, age is not a significant predictor of acupuncture use. An increase in out-of-pocket expenses for conventional health care may have encouraged individuals, irrespective of their age, to use acupuncture. Moreover, the number of underinsured adults in the United States dramatically increased to 25 million in 2007 (Schoen, Collins, Kriss, & Doty, 2008). As the number

of underinsured adults increases, individuals in this group may be more willing to use acupuncture or other alternative treatments as it may be perceived as a more affordable option relative to conventional medicine.

In addition, prior studies have indicated that acupuncture utilization varies by race/ethnicity (Barnes, Bloom, & Nahin, 2008; Burke et al., 2006). However, we found that being Asian is not a significant predictor of acupuncture use. This suggests that as immigrants gradually acculturate, they relinquish cultural practices of their native countries and adopt the cultural practices of their host countries. In a study by Lee and colleagues, Mexican- and Asian-American individuals are less likely to use ethnic-specific CAM providers after spending more time living in the United States (Lee, Goldstein, Brown, & Ballard-Barbash, 2010). Further, we found that females were more likely to utilize acupuncture services than males. Previous studies have reported that women are increasingly incorporating CAM therapies into their health and well-being practices (Eisenberg et al., 1998; Tindle, Davis, Phillips, & Eisenberg, 2005). It is reported that more than 1.2 million U.S. women have used acupuncture (Upchurch et al., 2008).

Our findings also suggest that the use of acupuncture is more prevalent among individuals with a bachelor's or higher degree. Higher educational attainment may lead to the opportunity to enhance individual's social, psychological, and economic skills (Winkleby, Jatulis, Frank, & Fortmann, 1992). Acupuncture utilization is not a mainstream medical treatment in the United States. As a result, one may have heightened awareness of possible alternative treatments available; awareness is closely correlated with an individual's education level and income. Therefore, individuals with a higher education level and annual income may be more likely to utilize acupuncture therapy. In addition, our findings also indicate that having a personal physician is associated with acupuncture use during the last 12 months before the survey. This suggests that physicians have become more comfortable advising their patients to use acupuncture, or that higher out-of-pocket expenses for their physician's office visit motivated individuals to seek alternative therapies such as acupuncture.

### Where and Why Do They Use Acupuncture?

Our study suggests that individuals residing in the Western United States are more likely to use acupuncture. The United States is a vast country with a heterogeneous population and where one lives has a potential influence on health care utilization (Wood, 1995). The Western region of the country has a larger Asian immigrant population and immigrants bring with them ethnic-specific cultural experiences (Burke et al., 2006). Our investigation also identifies those individuals who report overall good health status to be more likely to utilize acupuncture to maintain their health status. The Grossman theory, which focuses on health as a consumption good, may help to explain

this occurrence. The theory indicates that health is similar to a capital good and it needs proper attention and maintenance (Grossman, 1972). Acupuncture is considered as a preventative wellness type of treatment. Thus, healthy individuals may be more willing to seek out unconventional therapies to maintain their good health status. Further, our results show that individuals with arthritis conditions and nervous system disorders are more likely to use the services of acupuncturists. Acupuncture is considered effective in treating conditions such as osteoarthritis, lower back, neck, shoulder, knee, and other chronic pains (Berman et al., 2004; National Institutes of Health, 1997).

### Reasons for Acupuncture Use and Cost Incurred

The major reason reported for acupuncture use is the ineffectiveness of conventional medical treatment. Our findings support previous studies conducted in the field of health care utilization. Individuals tend to look for alternative types of treatment when they do not find relief from conventional treatment (Astin, 1998; Burke et al., 2006). The second major reason for acupuncture use is overall health and disease prevention. As our results indicate the educated individuals, high-income earners ( $\geq \$75,000$ ) and those with good health status are more likely to use acupuncture. These individuals have the monetary resources to indulge in nonconventional therapies that target overall health maintenance and disease prevention. The third major reason reported for acupuncture use is recommendations from family and friends. Individuals usually ask their relatives and friends for help and opinions on health choices and, to a large extent, families and friends influence individuals' choice of medical treatment (Boon & Kachan, 2008; Diefenbach et al., 2002; Griffiths, 1995). The fourth major reason is nonaffordability of conventional medical care. Conventional medical care has become less affordable with the rise in health insurance premiums and out-of-pocket expenses. If health care costs continue to increase faster than personal income, the number of uninsured and underinsured will continue to grow and individuals will seek comparatively less expensive alternative therapies of health care (Pagan & Pauly, 2005).

The estimated average cost incurred among acupuncture users in our study was \$94 per visit and 67% individuals in this group visited acupuncturists between 2 and 10 times. Even \$94 per visit is a huge amount, especially when multiple visits to the acupuncturists are taken into account. Currently, Medicare does not cover acupuncture (Centers for Medicare and Medicaid Services, 2012). However, some private health insurances such as Blue Cross and Blue Shield and some health maintenance organizations such as Kaiser Permanente cover acupuncture services (American Association of Acupuncture and Oriental Medicine, 2012b). In addition, some states, such as Florida, Maine, Montana, Nevada, Texas, Virginia, and Washington State among others, mandate acupuncture coverage (California Health Benefits Review Program,

2011). California has been looking for scientific evidence on the effectiveness of acupuncture before mandating its coverage (California Health Benefits Review Program, 2011). Further, the Patient Protection and Affordable Care Act (PPACA) does not specifically mandate acupuncture coverage. However, the PPACA requires that plans should provide coverage of health services included in the essential health benefits package (EHB). The EHB contains a list of 10 categories of health services, including preventative services, wellness services, and chronic disease managements. The American Association of Acupuncture and Oriental Medicine is campaigning to convince the Department of Health and Human Services that acupuncture meets the inclusion criteria for EHB; hence, it deserves insurance coverage (American Association of Acupuncture and Oriental Medicine, 2012a). The current trend in increased acupuncture use and the high costs associated with each visit to an acupuncturist poses questions to health care insurers regarding its coverage.

### Limitations and Future Research

The results of our study should be considered in the light of certain limitations. Because of the cross sectional nature of our design, we could not capture an individual's transition from conventional medicine to acupuncture and vice-versa. However, this is the first study that examined the correlates of acupuncture use among individuals who have ever used acupuncture. The data did not have information on whether the individual used acupuncture as an alternative therapy or complementary therapy. This study could only analyze those reasons that were included in the 2012 NHIS questionnaire. Additional reasons, such as cultural values and beliefs that we believe were important to acupuncture utilization, were not included. In addition, the data collected were based on self-reports; the use of self-reported data increases the possibility of having internal validity threats such as response bias and patient recall bias. The response rate for "Reasons for utilization" in the survey was only 18% ( $n = 351$ ) of the total 1,999 individuals who reported utilization. Hence, the generalization of our results regarding reasons for utilization may be limited. However, the NHIS is a highly reliable and valid data set, which has a wide degree of generalizability to the broader U.S. population (Boslaugh, 2007).

Over the years, acupuncture has matriculated from cultural curiosity to one of the leading CAM therapies in the United States (Kaptchuk, 2002). The rising cost of conventional medical care and its nonaffordability may have resulted in an increasing number of people seeking CAM therapies such as acupuncture. Future research should focus on longitudinal designs, which would allow the opportunity to account for an individual's transition from conventional medicine to complementary or alternative therapies such as acupuncture, and health insurance provision for acupuncture users.



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