

Acupuncture Use in the United States: Racial and Ethnic Trends

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Abstract

This work presents findings on acupuncture use in the United States, using data from the 2002 National Health Interview Survey (NHIS), conducted by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). Acupuncture is a form of traditional Chinese medicine which uses needling to maintain and restore health. Approximately four percent (n=1,274) of the population surveyed (n=31,044) used acupuncture at some point in their lives. Estimates were generated with SAS, using bivariate analysis and binary logit multiple regression. Use of acupuncture varies by sex, education, age, geographic region, and race and ethnicity. Specifically, the best predictors of acupuncture use are Chinese descent and age between 55-64 years old. This work is relevant to the present shift in prevalent healthcare options and the need to gain knowledge on cultural and demographic differences in health behaviors.

Preferred Keywords: acupuncture, race, ethnicity, NHIS 2002

Introduction

The use of complementary and alternative medicine (CAM) in the United States has been steadily increasing since the 1950s (Kessler et al., 2001). CAM is defined by the National Center for Complementary and Alternative Medicine as “a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine” (Cuellar et al., 2003). Acupuncture, considered a form of CAM, first received widespread exposure in the United States in the 1970s (Allchin, 1996:S107). In 1971, *New York Times* reporter James Reston described how doctors in China used acupuncture to relieve his post-surgical pain (NCCAM, 2002), and it is believed that the prevailing youth counterculture of the 1970s encouraged the use of complementary and alternative medicine in general (Kessler et al., 2001:262). Despite its relatively recent arrival here in the United States, acupuncture has been in use for over

2,000 years, and is one of the most commonly used medical procedures worldwide (NCCAM, 2002).

In this paper, I examine the demographics of acupuncture users in the United States with data from the 2002 National Health Interview Survey. In particular, I discern variation of acupuncture use according to sex, age, education, income, geographic region, and race and ethnicity. I predict that individuals of Chinese descent will be most likely to have used acupuncture at some point in their lives, since acupuncture is a form of traditional Chinese medicine. Chinese use of acupuncture will not significantly vary due to education, income, and sex, whereas use by other racial and ethnic groups may vary significantly among these variables. For all racial and ethnic groups, use of acupuncture will be more prevalent among middle-aged to older persons, possibly due to their seeking treatment for chronic disorders. Use of acupuncture will also vary by region, due to racial or ethnic population distribution, as well as distribution of schools of acupuncture or CAM. In particular, Western states have high populations of Asians, but also a higher concentration of CAM schools than other regions (Barnes et al, 2004:16). This may be indicative of easier access to acupuncturists and legislation and policies favoring CAM use.

Acupuncture

Acupuncture has its origins in naturalist and Taoist thought. Its roots are in traditional Chinese medicine, but American acupuncturists also incorporate methods from Japan and Korea (NCCAM, 2002). According to this holistic medical system, more than 2,000 points on the human body connect with 12 primary and 8 secondary meridians which conduct qi (vital energy). The points in the skin are penetrated with thin, solid

metallic needles in order to manipulate the flow of qi, so that Yin and Yang are balanced (NCCAM, 2002). Yin-Yang theory, based on the philosophy of polar complements, states that all things are parts of a whole, and Yin and Yang contain within themselves the possibility of opposition, complementarity, and change. Illnesses are caused by imbalance of Yin and Yang. For example, Yin illnesses are characterized by weakness and coldness, while Yang illnesses are characterized by strength and heat (Kaptchuk 1983:8-9). The equilibrium of Yin and Yang, therefore, stabilize the spiritual, emotional, mental, and physical health (NCCAM, 2002). Studies in China have shown that acupuncture is effective in treating many diseases recognized by Western medicine, such as bronchial asthma and angina pectoris (Kaptchuk, 1983: 20-23). Results from the 2002 NHIS show that 56.2% of acupuncture users tried the therapy believing that acupuncture combined with conventional medical treatments would help their condition (Barnes et al., 2004:13). Other forms of traditional Chinese medicine that focus on manipulation of qi include acupressure, tai chi, and qi gong.

In order to resolve the discord between Chinese medicine and the Western biomedical model, Western scientists have proposed that acupuncture may work by stimulating points that relay electromagnetic signals, thereby releasing pain-killing biochemicals, by activating opioid systems, or by altering neurohormones, neurotransmitters, and parts of the central nervous system (NCCAM, 2002).

Surveys on Acupuncture Use

The 2002 National Health Interview Survey included an Alternative Health/Complementary and Alternative Medicine Supplement, whose findings reported that 62.1% of the United States population has used some form of Complementary and

Alternative Medicine (CAM) in the past 12 months. Examples of CAM include acupuncture, ayurveda, homeopathy, naturopathy, chelation therapy, diet-based and vitamin therapies, chiropractic care, massage, biofeedback, and reiki. The survey found that 1.1% of the population had used acupuncture in the past 12 months (Barnes et al., 2004:8). This estimate shows a rise from previous national surveys done in 1997 and 1990 showing 42.1% and 33.8% use of CAM in the last 12 months, and 1.0% and 0.4% use of acupuncture in the last 12 months respectively (Eisenberg et al., 1998:1572). The NHIS results denote racial categories of White, Black, and Asian (Barnes et al., 2004:10) while the Eisenberg reports include White, African-American, Hispanic, Asian, and Other (Eisenberg et al., 1998: 1571). Other surveys have been conducted to determine use of alternative medicine among ethnic groups, but are not comparable or generalizable due to small sample size or broad definition of CAM (Wootton and Sparber, 2001a). Other studies on CAM or acupuncture include a large number of respondents, but differentiate only between White and Non-White, White and Black, or White, Hispanic/Latina, and Black (Astin, 1998; Cuellar et al., 2003; Russ and Rosenheck, 1999; Factor-Litvak et al., 2001). As a result, generalizable differences between Asian subgroups in use of acupuncture have yet to be reported.

Data and Methods

Cross-sectional data was taken from the 2002 National Health Interview Survey (NHIS), which was conducted by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS, 2003). This nationally representative survey was comprised of 31,044 adult respondents from the US civilian non-institutionalized population. Of this population, 1,274 individuals (4.1% of the

survey population) responded “yes” to the question, “Have you ever seen a provider or practitioner for acupuncture?”

The variables can be found in the Alternative Health/Complementary and Alternative Medicine Supplement, Sample Adult Core, Person Core, and Family Core Components. Variables used were if the respondent had ever used acupuncture, age, education, income, race and ethnicity, geographical region of residence, and sex. Some variables were recoded for purposes of analysis; for example, race and ethnic groups were recoded to create categories of non-Hispanic white, non-Hispanic black, Hispanic, Chinese, Other Asian, and Other/Multiple Race. All estimates in this paper were generated using SAS. The dependent variable, use of acupuncture, is dichotomous. The SAS procedure TTEST was used to produce statistics on education and acupuncture use. The SAS procedure FREQ was used for descriptive analyses of acupuncture use and race/ethnicity, income, sex, geographic region, and age. The SAS procedure LOGISTIC was used for binary logit multiple regression to attempt to identify predictors of acupuncture use. This procedure was used to model the independent effects of sex, age, region, race/ethnicity (and included in a second model), income, and education on acupuncture use. In order to examine the extent to which the effects of the characteristics vary across racial and ethnic groups, separate regression models were run for each racial and ethnic category. LOGISTIC was also used to determine the effects of sex, income, education, age, and geographic region on acupuncture use across racial and ethnic categories.

Strengths of the data for this particular work include that it comprises a nationally representative sample of US adults and that some subgroups of Asians were identified.

In particular, respondents of Chinese descent can be distinguished from other Asians. However, the “Other Asians” category provided by NHIS encompasses many subgroups, so it is difficult to discern the effects, if any, from Koreans and Japanese, whose traditions have also been incorporated into American acupuncture. NHIS has separate categories for Filipinos and Asian Indians, but their use of acupuncture was very low (n=6 and n=2, respectively), so for this work, these groups were combined into the “Other Asian” group. Likewise, acupuncture use by American Indians/Alaskan Natives was also low (n=4) and this group was merged into the “Other/Multiple Race” group. For these groups, not only were numbers of respondents relatively low, but it could be predicted that they would be less likely to use acupuncture, possibly due to their own cultural forms of alternative medicine (folk healers for Filipinos and American Indians, ayurveda for Asian Indians).

Findings

Table 1 shows use of acupuncture among US adults. Of the population surveyed, 4.17% have used acupuncture at least once in their lives. A higher percentage of women than men have used acupuncture, which is consistent with trends in CAM use overall. A higher percentage of middle-aged to older people have used acupuncture compared to their younger counterparts; only 1.74% of the 17-24 year olds reported acupuncture use, whereas 6.33% of the 55-64 year olds reported such use. The highest percent of acupuncture users reside in the Western states (6.64%), and of all racial and ethnic groups, Chinese have the highest percentage of acupuncture users (16.85%).

(Table 1 about here)

Table 1: Frequencies and Percentage Distributions of Demographic Characteristics of Survey Respondents

Variable	Frequency Group	Frequency Acupuncture Users	Percentage Acupuncture Users
Sex			
Female	17,250	816	4.73 %
Male	13,266	458	3.45
Age			
17-24	3,324	58	1.74
25-34	5,757	157	2.73
35-44	6,384	257	4.03
45-54	5,391	311	5.77
55-64	3,916	248	6.33
65-74	2,918	149	5.11
75+	2,826	94	3.33
Region			
Northeast	5,565	255	4.58
Midwest	7,029	248	3.53
South	11,294	331	2.93
West	6,628	440	6.64
Race/Ethnicity			
Non-Hispanic White	20,121	913	4.54
Non-Hispanic Black	4,077	88	2.16
Hispanic	4,022	137	3.41
Chinese	178	30	16.85
Other Asian	692	60	8.67
Other/Multiple Race	1,353	42	3.10
Total	31,044	1,274	4.17 %

"Other Asian" includes Filipinos, Asian Indians, Japanese, Koreans, and other Asian groups.

Data Source: Derived from 2002 NHIS (2004).

Table 2 shows two models of the effects of particular variables, independent of one another, on acupuncture use. The first model controls for the effects of sex, age, geographic region, and race/ethnicity, while the second model includes these variables as well as income and education. The analysis shows that for both models, women are significantly more likely (31% and 34%) to use acupuncture than are men. For respondents age 35 and above, both models show a significant relationship between age and acupuncture use when compared to the reference group of 17-24 year olds. Also seen in both models, compared to the South, a significant relationship is seen between Northeast and West regions and acupuncture use. For the racial and ethnic categories, by comparing the two models we can see that socioeconomic factors account for the difference in use of acupuncture by Hispanics. For all other categories besides Other/Multiple Race, there is a significant relationship between race/ethnicity and acupuncture use. Most importantly, Chinese have the highest odds ratio values of all racial and ethnic groups in both models. In model 2, we see that education and use of acupuncture are positively correlated.

(Table 2 about here)

Table 3 shows the logistic regression odds ratios of the effects of sex, income, education, age, and geographic region on acupuncture use across racial and ethnic categories. Due to the small numbers of respondents in the age categories for certain racial/ethnic groups, the age categories were merged into two categories. For the Chinese group, acupuncture use does not vary significantly due to sex, region, income, and education, but there is a significant relationship seen with age. For Non-Hispanic Whites, there is a significant relationship between use of acupuncture and sex, age, Northeast or

Table 2: Logistic Regression Odds Ratios of the Effects of Sex, Age, Region, Race/Ethnicity, Income, and Education on Acupuncture Use, U.S. Adults, 2002

Variable		Model 1	Model 2
Sex [Female]			
	Male	0.69***	0.66***
Age [17-24 years old]			
	25-34	1.54**	1.31
	35-44	2.33***	2.08***
	45-54	3.39***	3.06***
	55-64	3.75***	3.59***
	65-74	2.93***	3.19***
	75+	1.77***	2.15***
Region [South]			
	Northeast	1.47***	1.41***
	Midwest	1.13	1.11
	West	2.25***	2.17***
Race/Ethnicity (Non-Hispanic White)			
	Non-Hispanic Black	0.52***	0.60***
	Hispanic	0.71***	1.04
	Chinese	3.87***	3.37***
	Other Asian	1.83***	1.74***
	Other/Multiple Race	0.86	0.91
Income [> \$20,000]	≤ \$20,000		0.94
Education			1.13***
Likelihood Ratio		473.77***	209.85***

*p<0.05; **p<0.01; ***p<0.001

Data Source: Derived from 2002 NHIS (2004).

Western residence, and income. The Other/Multiple Race category does not show any significant variation across the variables.

(Table 3 about here)

Conclusion

Overall, acupuncture use is higher among females than males. This is consistent with data that show that women are more likely than men to use CAM in general (Barnes et al., 2004:5). Acupuncture use by age is highest in the group “55-64 years old.” This may correspond to an aging population that suffers from chronic conditions for which conventional Western medicine may not be helpful. This is also the age group that may be retired, thereby losing healthcare benefits from employment, but is not yet eligible for Medicaid. The out-of-pocket expense for acupuncture may be comparable to or less than an out-of-pocket expense for conventional Western healthcare. Overall, there is a quadratic relationship between age and use of acupuncture, showing an inverse “U” pattern across age. Acupuncture use by region is highest in the Western states, likely due to high populations of Asians, but also a higher concentration of CAM schools than other regions (Barnes et al, 2004:16). This may be indicative of easier access to acupuncturists and legislation and policies favoring CAM use. The Northeast region had the second highest values in both models, also likely due to a higher population of Asians compared to the Midwest and South. Education and acupuncture use are positively correlated, but there is no significant relationship between acupuncture use and income below or above \$20,000/year. Acupuncture use by race and ethnicity is highest in the group, “Chinese” and second highest in the group, “Other Asian.” In Model 1, their odds ratios are 3.87 and 1.83, and in Model 2, their odds ratios are 3.37 and 1.74 respectively.

Table 3: Logistic Regression Odds Ratios of the Effects of Sex, Income, Education, Age, and Region on Acupuncture Use Across Racial and Ethnic Categories, U.S. Adults, 2002

	Non-Hispanic White	Non-Hispanic Black	Hispanic	Chinese	Other Asian	Other/Multiple Race
Sex [Female]						
Male	0.65***	0.92	0.67*	0.90	0.54*	0.93
Age [<35 years old]						
≥35	2.20***	2.73***	1.93***	4.90**	1.96*	1.81
Region [South]						
Northeast	1.30**	2.78***	1.46	0.58	1.13	2.08
Midwest	1.13	1.83*	0.89	0.96	0.11*	0.69
West	2.33***	3.98***	1.41	0.94	1.37	1.29
Income [> \$20,000]						
≤ \$20,000	0.97	0.85	0.97	1.39	0.36*	1.07
Education	1.15***	1.12**	1.12***	1.04	0.99	1.05

*p<0.05; **p<0.01; ***p<0.001

Data Source: Derived from 2002 NHIS (2004).

As predicted, individuals of Chinese descent were most likely to have used acupuncture, and this use does not vary significantly due to sex, region, income, or education. The reasons for significance with age may be due to the reasons cited above for all racial and ethnic groups, or could be the result of cohort effects. For example, older Chinese people may be more likely to be immigrants to the United States, as opposed to native-born US citizens. These immigrants may be more likely to have used traditional Chinese medicine, including acupuncture, while in their original homeland. They may also be more likely to adhere to Chinese culture, traditions, and beliefs, particularly concerning health and well-being, therefore they would be more likely to use acupuncture whether in China or the United States.

Areas for Future Research

The NHIS did not contain questions regarding cultural reasons for choosing acupuncture, effect of nativity or cultural identity on acupuncture use, frequency of acupuncture use, and exclusivity of acupuncture use. A study which attempted to touch on the surface of these issues is Astin's work (1998) which addresses CAM use and commitment to environmentalism, feminism, interest in spirituality, and the cutting edge of culture. However, this does not address acupuncture or Chinese tradition specifically. This information would be useful to know for future studies that attempt to examine this topic in more depth.

Further analysis could determine if there are significant differences in acupuncture use between all racial and ethnic groups, instead of comparing all the groups to non-Hispanic whites.

Other topics which warrant further research include determining if Chinese and “Other Asians” have high rates of use for other forms of traditional Chinese medicine, such as tai chi, qi gong, and Chinese herbal medicine, or high rates of use for other forms of CAM. It would also be interesting to see if users of acupuncture of any racial or ethnic group are more likely to use other forms of CAM as well. Finally, it would be useful, in particular for practitioners of conventional medicine, to know if people are using acupuncture specifically due to dissatisfaction with Western conventional healthcare. The NHIS report states that this is the case with CAM in general, and these results refute the findings of previous surveys (Barnes et al., 2004; Eisenberg et al, 1998; Astin, 1998).

Relevance

As CAM is an extremely broad category, particular examination on each form of CAM is reasonable. This analysis on racial and ethnic trends in acupuncture is a worthy investigation and hopefully one of many such works to come.

There is a growing emphasis in conventional medicine on preventative care, which is the main focus of acupuncture and other forms of CAM. Indeed, this may correspond to the steady rise in acupuncture and CAM use has been rising in the US over the last several decades (Kessler et al., 2001). The changing environment of healthcare, which has shifted from complete trust in physician authority to empowerment of the patient (Pescosolido, 2001; Gaylord, 1999), is a setting conducive to increased use of alternative modes of healthcare. These changes correspond to more professionalization and social acceptance of acupuncture, and more out-of-pocket healthcare expenses for the population (Baer et al., 1997). It was only recently in 1996 that the U.S. Food and Drug Administration (FDA) has approved acupuncture needles for use by licensed practitioners

(NCCAM, 2002), with states each having their own regulations on how acupuncturists are licensed. These results add to the knowledge we have on cultural differences in health behaviors, which could also reflect different health outcomes across various groups.

Through the lenses of both the alternative and conventional medical communities, it would be very beneficial to understand the demographics and reasons behind peoples' healthcare choices. This knowledge could lead to better integration of the two systems to implement consistent regulations and licensure standards, minimize injury to the patient, heighten awareness of the patients' health, bridge cultural gaps and misunderstandings between the healthcare provider and the patient, and provide better service and more satisfaction. Realizing the prevalent use of alternative medicine could encourage authorities to more quickly and thoroughly address concerns regarding testing these therapies for safety (Angell and Kassirer, 1998; Miller et al., 2004) as well as establishing more courses in medical education on these therapies. Since most people who use alternative therapies are paying out-of-pocket, it may behoove entities involved in the market aspect of healthcare to pay a great deal of consideration to the demands of these healthcare consumers. For example, an employer may attract potential employees by offering benefits related to alternative therapies.

This work is valuable to the fields of medical sociology, demography, complementary and alternative medicine, conventional Western medicine, and the many fields affected by these far-reaching arenas. This paper adds to the escalating body of work done on CAM and acupuncture use in the United States, highlighting new findings on racial and ethnic trends in use of this therapy.

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