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ORIGINAL PAPER

How Does Acculturation Affect the Use of Complementary and Alternative Medicine Providers Among Mexican- and Asian- Americans?

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Abstract Researchers have found that immigrants in the United States gradually relinquish cultural practices and adopt health behaviors similar to native born individuals as they acculturate. Few studies have looked at acculturation and Complementary and Alternative Medicine (CAM) use, particularly ethnic forms of CAM. This study uses data from the 2001 California Health Interview Survey—Complementary and Alternative Medicine (CHIS-CAM) supplement to estimate the prevalence of CAM provider use among Mexican- and Asian- Americans and examine the relationship of acculturation on use. Multinomial logistic regression models were used to predict the probability of provider use based on socio-demographic variables, health status and acculturation. Mexican- and Asian- Americans who have spent more time in the US were more likely to use chiropractors or massage therapists compared to no CAM provider. Both groups were less likely to use ethnic-specific CAM providers with more time in the US compared to chiropractors or massage therapists.

Keywords Acculturation · Complementary and alternative medicine providers · Mexican American · Asian American

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Introduction

The use of complementary and alternative medicine (CAM) continues to rise in the United States [1, 2]. The National Center for Complementary and Alternative Medicine defines CAM as, "a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine" [3]. Relatively little is known about acculturation and the use of CAM among immigrants. Existing studies reveal mixed findings and have been limited by variations in defining CAM, inadequate sample size, and administration of surveys in English only [4–8]. Given the increasing proportion and influence of immigrants throughout the US, understanding immigrants' CAM use is important.

Acculturation is an adaptation process that occurs when individuals from one culture are in contact with a host culture [9]. In this process, individuals adopt characteristics of the mainstream culture and retain or give up traits of their traditional backgrounds. Recent acculturation theories take into account the possibility of bicultural identity, the potential for multiple reference populations, and segmented forms of acculturation [10, 11]. Proxy measures of acculturation often used in public health research, such as language use and length of residence in the US, are less robust in their ability to capture different aspects of acculturation [12–16].

Studies of the relationship between acculturation and CAM use have produced inconsistent results. Among Latino women, cultural heritage, education, healthcare beliefs, degree of acculturation, and socioeconomic factors influenced both CAM use and the type of CAM used [17]. Acculturation was not significantly related to use of curanderos among a sample of Mexican-Americans in Texas [18]. In another study, Hispanics speaking primarily

English had patterns of CAM use similar to non-Hispanic whites [1]. A study of Korean Americans found those who were younger, well educated, and more acculturated preferred alternative medicine [19].

In a recent study, Hsiao et al. (2006) tested the utility of viewing individual CAM modalities as "ethnic-specific" [4]. The authors found that members of different ethnic groups are more likely to use CAM traditionally associated with that group. For example, Asians had the highest use of traditional Chinese practitioners and acupuncturists while Latinos had the highest use of curanderos.

Specifying the effect of acculturation on health behaviors and service utilization is important for understanding health disparities between various immigrant groups. Acculturation has been found to function as both a risk as well as a protective factor for poor health [12, 20]. As cultural practices may have beneficial or adverse effects on health status, it is important to understand how these factors interact.

This study looks at the following research questions: (1) What factors are associated with the use of CAM providers among Mexican- and Asian- Americans; and (2) What is the relationship between acculturation and the use of CAM providers among these two groups? Based on existing literature, we hypothesize that CAM provider utilization is associated with socioeconomic status, health, and other socio-demographic characteristics. We also hypothesize that acculturation is associated with the use of CAM providers for Asian- and Mexican-Americans. Specifically, use of more mainstream providers (i.e. chiropractors or massage therapists) increases with more acculturation; while use of ethnic-specific CAM providers (i.e. curandero or acupuncturist/Traditional Chinese Medicine (TCM) practitioner) decreases.

Methods

Participants

The data for the study come from the 2001 California Health Interview Survey Complementary and Alternative Medicine (CHIS-CAM) supplement, a follow up survey to CHIS 2001. CHIS 2001, is a random-digit dial survey of 55,428 adults drawn from non- institutionalized households and representative of California's diverse population [4, 21]. The CHIS-CAM sample is demographically similar to the CHIS 2001 sample and is also representative of California's population. The methodology for CHIS 2001 is described elsewhere in more detail [21]. In order to study ethnic-specific CAM use, our sample is restricted to Mexican-Americans, and Asian-Americans of Chinese, Japanese, and Korean descent.

Data Collection

The CHIS-CAM sample was drawn from approximately 80% of the adult respondents who completed CHIS 2001 and agreed to be re-contacted. The study population included all participants who reported being told by a physician that they had cancer (excluding non-melanoma skin cancers) and a sample of all other respondents stratified by race and ethnicity. The sampling frame maximizes the number of minority respondents and those with cancer. The final sample included 9,187 individuals (1,844 cancer survivors, 4,951 individuals with a non-cancerous chronic condition and 2,392 individuals with no chronic condition or cancer). The CHIS-CAM survey used computer-assisted telephone interview and was administered in English, Spanish, Cantonese, Mandarin, and Korean between January and April 2003. After excluding individuals who were never reached by telephone, the overall adjusted response rate was 77.3%. The sample weights for CHIS-CAM were based on the final weights for CHIS 2001 adjusting for eligibility and response rates. The survey procedures and instruments used in both CHIS 2001 and CHIS-CAM were approved by the Institutional Review Board of the University of California, Los Angeles.

Measures

While there are many forms of CAM, modalities such as self prayer, special diets, and exercise are often vaguely defined and difficult to operationalize. In contrast, the use of a CAM provider lends itself to more reliable assessment. CHIS-CAM asked about the use of 11 CAM providers (chiropractor, massage therapist, acupuncturist, traditional Chinese medicine practitioner, osteopath, curandero, naturopath, homeopath, Native American healer, Ayurvedic practitioner, and Reiki practitioner). This study examines the use of chiropractors, massage therapists, curanderos, and acupuncturists/traditional Chinese medicine practitioners (TCM). Chiropractic and massage therapy are the two most common forms of provider-based CAM in the US [22]. Acupuncturist/TCM and curanderos were included because they can be characterized as "ethnic-specific" CAM providers for the three Asian subgroups and Mexican-Americans [4, 23].

The predictor variables used in the analyses include: sex, age, education, insurance status, acculturation and health status. Individuals with a chronic condition reported a diagnosis of any of 11 conditions (asthma, lung or breathing problems, heart conditions or cardiovascular disaster, chronic obstructive pulmonary disease, arthritis, or rheumatism, back or neck problems, stroke, diabetes, hypertension, depression or anxiety disorders, or any other conditions). Individuals who were healthy did not report a

diagnosis of cancer or a chronic condition. We used English proficiency (self-reported) and proportion of life spent in the United States as proxy measures of acculturation. Proportion of life in the US (0–25%, 26–50%, 51–75%, 76–100%) was calculated by dividing length of stay in the US by age in years. Proportion of life was used rather than total number of years because it takes into account whether the immigrant arrived to the US as an adult or as a child and enabled us to look at the differences between various levels of acculturation [24].

Analysis

We conducted exploratory univariate and bivariate analyses to look at the association of various socio-demographic variables and acculturation with the use of select CAM providers. Statistical analyses include bivariate analyses using SAS version 9.0 (Cary, NC) and multivariate analyses using SUDAAN 8.0 (Research Triangle Institute, NC). Chi-square test of independence was used to test the significance of differences for each CAM provider used by proportion of life in the US and English proficiency.

Multinomial logistic regression models were estimated to examine various predictors on CAM use within the two ethnic groups. The outcome categories for the multinomial logistic regression among Mexican-Americans included: *ever used* a curandero, chiropractor or massage therapist, and did not use any provider. The categories for the model predicting provider use among Asian-Americans included: *ever used* an acupuncturist/TCM, chiropractor or massage therapist, and did not use any provider. Ever use of a provider was used rather than past 12 months because the sample sizes for past 12 months were significantly reduced and produced unstable results. Each model included the same set of independent variables. The estimates reported in this study were weighted using the sample adult record weight from CHIS 2001 to represent the population of California age 18 and over. Individuals with missing data on any of the covariates were dropped from the analysis. Characteristics of those with missing values were no different than individuals without missing values.

Models were estimated separately for Asian- and Mexican- Americans to examine whether the relationships between the measures of acculturation and the use of CAM providers are consistent between the two immigrant groups. To create mutually exclusive outcome categories and maintain sufficient sample sizes, Mexican-Americans who used a curandero as well as those who used a curandero in addition to a massage therapist and/or chiropractor were combined. Mexican-Americans who reported using a chiropractor, massage therapist or both, but not a curandero were combined. Similarly, Asian-Americans who used acupuncturist/TCM as well as those who used acupuncturist/TCM and a massage therapist and/or chiropractor were combined. Asian-Americans who reported using a chiropractor, massage therapist or both, but not an acupuncturist/TCM were combined. These categories were viewed to be most logical in answering the research questions and supported by CAM literature that indicate that chiropractic and massage therapy are largely used by whites; whereas Mexican- and Asian- Americans are more likely to use curanderos and acupuncturist/TCM, respectively [4.]

Results

Sample Characteristics

Of the 9,187 respondents in CHIS-CAM, 17% were Mexican and 6% were Chinese, Japanese, or Korean. Table 1 shows the demographic characteristics of the total CHIS-CAM sample, Mexican-Americans, and the three Asian subgroups combined into an Asian-American category. Mexican-Americans were younger with fewer individuals over 65 years (4%) compared to Asian-Americans (17%) and less educated with fewer individuals having at least some college education. The distribution of the proportion of life in the US was similar between the two groups. However, there was a wide discrepancy in English proficiency. Among Mexican-American respondents, 33% reported speaking English very well and about 50% reported speaking English poorly; whereas, among Asian-Americans, 44% reported speaking English very well and 31% reported speaking English poorly.

Table 2 shows that while the overall, unadjusted use of CAM providers was high among both groups, the type of provider used varied between the two groups. The number of individuals who used providers other than those shown in the table was too small for meaningful analysis. Bivariate analysis shows that the relationship between acculturation and use of CAM providers varies by measure of acculturation and by provider used between Mexican-Americans and Asian-Americans.

Table 3 presents the adjusted odds ratios, the 95% confidence intervals (CI), and significance levels (p) from the multinomial logistic regression predicting the use of curanderos and the use of a chiropractor or massage therapist compared to the use of no CAM provider among Mexican-Americans. Health status and poor English proficiency significantly predicted the use of a curandero and chiropractor/massage therapist. Age, education, and proportion of life in US were significant predictors for the use of a chiropractor/massage therapist.

Mexican-Americans with poor English proficiency were 68% less likely to use a curandero versus no provider than

Table 1 CHIS-CAM sample characteristics of total sample, Mexican- and Asian-Americans[a] (unweighted Ns, weighted %s)

	CHIS CAM sample		Mexican-Americans		Asian-Americans	
	N	%	*N*	%	*N*	%
Sex						
Male	3668	49	814	51	316	46
Female	5519	51	1233	49	452	54
Age						
20–35	1545	32	661	54	130	29
36–50	3073	33	852	32	305	37
51–64	2352	20	363	10	184	17
65+	2216	16	171	4	149	17
Education						
High school or less	3725	39	1443	73	224	31
Some college or more	5462	61	604	27	544	69
Insurance status						
Insured	8052	85	1503	65	653	84
Uninsured	1135	15	544	35	115	16
Health status						
Cancer	1844	7	124	3	37	3
Chronic illness	4951	57	1101	47	463	59
No illness	2392	36	822	50	268	38
Proportion of life spent in US						
0–25%	616	7	265	16	162	22
26–50%	1162	13	574	33	214	30
51–75%	805	7	376	15	102	12
76–100%	6595	73	830	36	289	37
English proficiency						
Very good	6850	76	734	33	353	44
Good	863	9	307	17	174	25
Poor	1474	15	1006	50	241	31

[a] Asian Americans include individuals of Chinese, Japanese, or Korean descent

Table 2 Ever use of CAM providers among Mexican- and Asian-Americans (weighted %s)

	CHIS-CAM sample (%)	Mexican-Americans (%)	Asian-Americans (%)
CAM provider			
Any	49	30	52
Chiropractor	36	23	24
Massage therapist	23	12	18
Acupuncturist/TCM	12	5	36
Curandero	1	3	0

those who had very good English proficiency. Mexican-Americans with poor English proficiency were 51% less likely to use a chiropractor/massage therapist than those with very good English proficiency. Mexican-Americans who have spent the majority of their life in the US were 2.40 times more likely to use a chiropractor/massage therapist than those who have spent 0–25% of their life in the US.

Table 4 shows the results of a model that predicts the use of acupuncturist/traditional Chinese medicine practitioner (TCM) and the use of a chiropractor/massage therapist, compared to the use of no CAM provider among Asian-Americans. Lack of insurance and chronic illness significantly predicted the use of acupuncturist/TCM; however, neither measure of acculturation was significant. Age and proportion of life spent in the US significantly predicted the use of a chiropractor/massage therapist.

The use of a chiropractor/massage therapist increased with proportion of life spent in the US. Asian-Americans who have spent 26–50% of their life in the US were three times more likely to use a chiropractor/massage therapist than those who have spent 0–25% of their life in the US. Asian-Americans who have spent the majority of their lives in the US were 8 times more likely to use a chiropractor/massage therapist than those who have spent 0–25% of their life in the US.

We also estimated models that compare the use of a curandero to the use of a chiropractor/massage therapist

Table 3 Results of the multinomial logistic regression showing the relationship between demographic, health status, and acculturation variables and the use of select CAM providers among Mexican-Americans. Asian-Americans

	No provider versus			
	Curandero		Chiropractor or massage therapist	
	Odds ratio (95% CI)	*p*	Odds ratio (95% CI)	*p*
Sex				
Male	1.00	Reference	1.00	Reference
Female	0.69 (0.34, 1.44)	0.32	0.78 (0.56, 1.07)	0.12
Age				
20–35	1.00	Reference	1.00	Reference
36–50	0.80 (0.29, 2.20)	0.66	1.48 (1.02, 2.14)	<.05
51–64	1.02 (0.37, 2.85)	0.97	1.77 (1.15, 2.72)	<.01
65+	0.56 (0.09, 3.50)	0.54	1.32 (0.73, 2.36)	0.36
Education				
High school or less	0.72 (0.26, 1.45)	0.36	0.62 (0.43, 0.90)	<.05
Some college or more	1.00	Reference	1.00	Reference
Insurance status				
Insured	1.00	Reference	1.00	Reference
Uninsured	0.70 (0.24, 2.02)	0.51	1.11 (0.75, 1.64)	0.60
Health status				
Healthy	1.00	Reference	1.00	Reference
Cancer	11.71 (1.69, 81.11)	<.05	2.94 (1.55, 5.60)	<.01
Chronic illness	3.20 (1.27, 8.04)	<.05	2.76 (1.92, 3.98)	<.001
Proportion of life spent in US				
0–25%	1.00	Reference	1.00	Reference
26–50%	0.83 (0.24, 2.90)	0.77	1.72 (0.84, 3.54)	0.14
51–75%	0.75 (0.21, 2.75)	0.67	2.04 (0.96, 4.36)	0.07
76–100%	0.44 (0.14, 1.43)	0.17	2.40 (1.03, 5.64)	<.05
English proficiency				
Very good	1.00	Reference	1.00	Reference
Good	0.54 (0.22, 1.31)	0.17	0.70 (0.40, 1.22)	0.21
Poor	0.32 (0.11, 0.89)	<.05	0.49 (0.26, 0.91)	<.05

among Mexican-Americans and a model that compares the use of acupuncturist/TCM practitioner to a chiropractor/massage therapist. We expected the results to be different than those presented in Tables 3 and 4 because these models directly compare the use of ethnic-specific CAM providers to those used largely by the native-born population (i.e. a chiropractor or massage therapist) [4].

Proportion of life in the US significantly predicted the use of a curandero and acupuncturist/TCM practitioner compared to a chiropractor/massage therapist among both groups. Mexican-Americans who have spent 76–100% of their life in the US were about 75% less likely to use a curandero than those who have spent only 0–25% of their life in the US. Asian-Americans who have spent 51–75% of their life in the US were about 80% less likely to use an acupuncturist/TCM practitioner than those who have spent 0–25% of their life in the US. Asian-Americans who have spent 76–100% of their life in the US were about 90% less likely to use an acupuncturist/TCM practitioner than those who have spent only 0–25% of their life in the US.

Discussion

As expected, we found that certain demographic and clinical factors were associated with the use of select CAM providers. In addition, our findings suggest that acculturation does significantly predict Mexican- and Asian-American's use of CAM providers; however the relationship varies by the measure of acculturation.

After adjusting for demographic and clinical factors, the results show that predictors of CAM provider use vary for Mexican- and Asian-Americans. While some factors, such as health status, were important in the use of select CAM providers for both groups, other factors were only significant for a particular ethnic group. Additionally, the impact of specific measures of acculturation varied between the

Table 4 Results of the multinomial logistic regression showing the relationship between demographic, health status, and acculturation variables and the use of select CAM providers among Asian-Americans

	No provider versus			
	Acupuncturist/traditional Chinese medicine		Chiropractor/massage therapist	
	Odds ratio (95% CI)	*p*	Odds ratio (95% CI)	*p*
Sex				
Male	1.00	Reference	1.00	Reference
Female	1.19 (0.78, 1.82)	0.41	1.07 (0.62, 1.87)	0.80
Age				
20–35	1.00	Reference	1.00	Reference
36–50	1.81 (0.99, 3.31)	0.05	3.18 (1.41, 7.17)	<.01
51–64	1.27 (0.65, 2.47)	0.48	1.87 (0.76, 4.60)	0.17
65+	0.95 (0.46, 1.98)	0.90	0.87 (0.28, 2.75)	0.81
Education				
High school or less	1.11 (0.64, 1.93)	0.71	1.02 (0.44, 2.37)	0.97
Some college or more	1.00	Reference	1.00	Reference
Insurance status				
Insured	1.00	Reference	1.00	Reference
Uninsured	1.92 (1.06, 3.47)	<.05	1.35 (0.57, 3.21)	0.50
Health status				
Healthy	1.00	Reference	1.00	Reference
Cancer	2.30 (0.91, 5.79)	0.07	1.26 (0.37, 4.27)	0.71
Chronic illness	1.69 (1.06, 2.70)	<.05	1.54 (0.83, 2.86)	0.17
Proportion of life spent in US				
0–25%	1.00	Reference	1.00	Reference
26–50%	1.26 (0.72, 2.20)	0.41	3.10 (1.08, 8.87)	<.05
51–75%	1.05 (0.51, 2.20)	0.89	5.49 (1.68, 17.89)	<.01
76–100%	0.59 (0.27, 1.30)	0.19	8.39 (2.38, 29.59)	<.001
English proficiency				
Very good	1.00	Reference	1.00	Reference
Good	0.84 (0.44, 1.60)	0.59	0.94 (0.40, 2.20)	0.89
Poor	0.76 (0.35, 1.65)	0.49	1.39 (0.45, 4.30)	0.56

two groups and between CAM providers. The findings show that the proportion of life spent in the US significantly predicts the use of ethnic-specific versus non ethnic-specific CAM providers for both groups. The results of this study also show that the relationship between acculturation and the use of CAM providers varies by the specific measure of acculturation.

Among Mexican Americans, English proficiency was an important predictor for the use of curanderos and a chiropractor/massage therapist when compared to non-users. Contrary to our hypothesis, Mexican-Americans with poor English proficiency were less likely to use a curandero. However, individuals with poor English proficiency were also less likely to use a chiropractor/massage therapist. A possible explanation is that Mexican-Americans with limited English proficiency may be less likely to utilize health services. For example, a larger proportion of Mexican Americans with poor English proficiency in CHIS reported no doctor visits in the past year than any other racial/ethnic group. Low sample size may also be a factor for the unexpected results. In contrast, the relationship between proportion of life in the US and use of a chiropractor/ massage therapist was consistent with our hypothesis.

Among Asian-Americans, English proficiency was not a significant predictor for the use of an acupuncturist/TCM or for the use of a chiropractor/massage therapist when compared to non-users. Proportion of life in the US was a significant predictor for the use of a chiropractor/ massage therapist but not for the use of an acupuncturist/TCM. These results indicate that Asian-Americans' use of an acupuncturist/TCM is not associated with acculturation when compared to not using a CAM provider. This is consistent with Wade et al.'s (2007) study, which found that more acculturated Chinese women adopted mainstream CAM practices while continuing to use TCM [25]. However, the model predicting the use of ethnic-specific

CAM providers compared to a chiropractor/massage therapist shows that both Mexican- and Asian- Americans who have spent the majority of their life in the US are less likely to use their respective ethnic-specific CAM providers than a chiropractor or massage therapist.

Our study is limited by its reliance on cross-sectional data and by the small number of Mexican-Americans who reported using curanderos. While the utilization rate of curanderos in this study is low, it is within the range reported by prior studies [18, 26]. Overall, few persons of Mexican origin in the United States use curanderos [18]. Our findings are also limited by the complexities involved with measuring acculturation and restraints posed by the data. Acculturation is a complex, multidimensional phenomenon not easily or accurately measured [27]. Although multidimensional measures of acculturation provide a more comprehensive understanding of acculturation and its association with health outcomes, this study is based on more specific measures of acculturation.

As English proficiency in our data is based on self-report, the reliability and validity of the responses may vary by group. The variables used to measure acculturation in one ethnic group may not work well in describing acculturation in other groups. Salant and colleagues (2003) suggest that non-scale measures, such as time since immigration and language, used individually or collectively, offer flexibility in measuring different dimensions of acculturation [24].

Although the use of traditionally ethnic-specific forms of CAM is increasing among Americans, the use of these techniques is declining among the subgroups of the population that first brought them to the US as these groups acculturate. This pattern is further complicated by the fact that the decline in use within particular ethnic groups varies for different CAM modalities, as well as by how acculturation is measured. If ethnic-specific CAM providers have beneficial or protective effects, the decline in their use may affect health status among ethnic groups. Further research would be useful to better understand why use of different types of CAM providers changes and how it impacts health status. The findings from this study offer a cautionary message about using overly simplistic assumptions to understand the relationship of ethnicity, acculturation, and health behavior. Our findings emphasize that commonly used measures of acculturation cannot be assumed to have a consistent meaning among different immigrant populations, nor can these measures be assumed to have similar associations with the use of different health care services.

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