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## Original Article

## The Use of Complementary and Alternative Medicine Among California Adults With and Without Cancer

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This article examines the extent and correlates of complementary and alternative medicine (CAM) use among a population-based sample of California adults that is highly diverse in terms of sociodemographic characteristics and health status. As a follow-up to a state-wide health survey of 55 428 people, 9187 respondents were interviewed by phone regarding their use of 11 different types of CAM providers, special diets, dietary supplements, mind–body interventions, self-prayer and support groups. The sample included all participants in the initial survey who reported a diagnosis of cancer, all the non-white respondents, as well as a random sample of all the white respondents. The relation of CAM use to the respondents' demographic characteristics and health status is assessed. CAM use among Californians is generally high, and the demographic factors associated with high rates of CAM use are the same in California as have been found in other studies. Those reporting a diagnosis of cancer and those who report other chronic health problems indicate a similar level of visits to CAM providers. However, those with cancer are less likely to report using special diets, and more likely to report using support groups and prayer. Health status, gender, ethnicity and education have an independent impact upon CAM use among those who are healthy as well as those who report suffering from chronic health problems, although the precise relation varies by the type of CAM used.

**Keywords:** CAM – cancer – chronic illness

### Introduction

Complementary and alternative medicine (CAM) plays a significant role in the American health care scene. A number of nation-wide studies employing probability samples have found that between 40–45% of the adult population has used CAM to deal with a health problem over the past 12 months (1–3). The most recent report based on a large national probability sample found that 62% of Americans had used CAM in the past year,

although this figure dropped to 36% if prayer was excluded from the definition of CAM (4). Research done on clinic or non-representative convenience samples has found that CAM use is common (50–100%) among those who suffer from chronic problems (5–18).

Still, much about the utilization of CAM among subgroups in the population remains unknown. For example, the frequently reported finding that CAM utilization is highest among non-Hispanic whites and those who are middle-aged is puzzling because poor health and the need for care are more pronounced among older people and members of minority groups. These groups suffer the most from those chronic illnesses and forms of disability that are least amenable by

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conventional medical care. One might expect CAM use to be higher among these groups. In fact, studies of CAM use based on clinical samples often do show high rates of CAM use among the poor, elderly and ethnic minorities (3,7,17). The lack of adequate representation of members from these groups, especially those with serious chronic illness, in much of the existing population-based studies on the use of CAM is a matter of concern (3,19,20). It may be that the association of CAM use with middle-aged, non-Hispanic whites is accurate when CAM is used as a means of staying healthy, whereas the relationship is less pronounced when CAM is used to deal with an existing chronic problem. Clarification of these questions requires samples that contain sufficient numbers of ethnic minorities and the elderly with and without chronic conditions, as well as a recognition that relying solely on broad measures such as 'any CAM use' may not be sensitive enough to specify the relationships in question.

This research uses data from the California Health Interview Survey 2001 (CHIS 2001) and the California Health Interview Survey Complementary and Alternative Medicine Supplement (CHIS-CAM) to specify those sociodemographic and health status characteristics that are associated with the use of various types of CAM in California.

## Methods

### The CHIS-CAM Survey Procedures

The data for this study were collected as a follow-up survey to CHIS 2001, a random-digit dial telephone survey of households drawn to be representative of the state's non-institutionalized household population. Data for CHIS 2001 were collected between November 2000 and October 2001. The completed sample contains 55 428 adults. Interviews were conducted in English, Spanish, Chinese (Mandarin and Cantonese), Vietnamese, Korean and Khmer. The sample (overall response rate of 37.7% based on screener completion of 59.2%, and interview completion of 63.7%) was weighted to be representative of California's population in terms of age, sex, race/ethnicity and rural-urban residence (21).

CHIS-CAM also used computer-assisted telephone interviews to sample the ~80% of CHIS 2001 respondents willing to be recontacted. The sampling frame included all CHIS 2001 respondents who reported a diagnosis of cancer (excluding non-melanoma skin cancers) and a sample, stratified by race and ethnicity, of the remaining respondents. In order to attain sufficient racial/ethnic diversity in the final sample, we sampled 100% of Pacific Islanders, American Indian/Alaska Natives, Asians, African-Americans and those reporting a multiracial identity who did not have cancer as well as 59% of the Latinos and 13% of the whites. Interviews were conducted in English, Spanish, Korean, Cantonese and Mandarin between January 30, 2003 and April 27, 2003. Mean interview time was 14.1 min. The overall unadjusted response rate for CHIS-CAM was 56%, and varied considerably by race/ethnicity. The response rate for whites was about 66%,

whereas the response rates for both African-Americans and Latinos were just below 50% and just above 50% for Asian-Americans. The 2 year gap between CHIS 2001 and CHIS-CAM, as well as the lack of detailed information for recontacting respondents were the primary factors responsible for the less than desired response rate. Although the response rate was lower than hoped for, it should be noted that response rates for telephone surveys have been declining over time (22) and that responses to items about health status and the utilization of health services among those who refuse to participate in telephone surveys has been shown to be similar to those who do participate (23). The net response rate for CHIS-CAM, i.e. the number of completed interviews divided by the number of contacted eligible respondents (total number selected minus the sum of never answered, deceased, non-locatable, non-working phone, sick and institutionalized) was 77.3%, indicating that there was a high level of response and interview completion among those who were able to be contacted. Although the oversampling of individuals with cancer means the sample was not designed to be representative of all California households, the sample is appropriate to use for comparing the use of CAM and specified CAM modalities by cancer survivors, those who report other chronic conditions, and those without such conditions among diverse segments of the population.

### The Survey Instrument

#### *Measures of CAM Use*

The CHIS-CAM interview reassessed respondents' health and illness status, and asked about use (ever, past 12 months) of 11 CAM providers [chiropractors, massage therapists, acupuncturists and other practitioners of traditional Chinese medicine (TCM), osteopaths, curanderos, naturopaths, homeopaths, Native American healers, Ayurvedic practitioners and Reiki practitioners], special diets for treating or preventing illness (open-ended), multivitamins and 30 specific dietary supplements (listed in Table 2), four mind-body techniques (imagery/guided imagery, meditation, hypnosis/self-hypnosis, biofeedback), self-directed prayer and support groups (open-ended).

#### *Sociodemographic and Health Status Measures*

Age at last birthday is grouped into four categories: 20-35, 36-50, 51-64 and 65+. The racial/ethnic categories are mutually exclusive. Latino is treated as a mutually exclusive 'race/ethnic' category, along with non-Latino white, non-Latino African-American and American Indian/Alaskan Native. Asian/Pacific Islander was also considered a separate racial/ethnic group including those who classified themselves as Chinese, Filipino, Japanese, Korean, South Asian, Vietnamese, Cambodian or Pacific Islander and Hawaiian Native. Respondents reporting more than one race/ethnicity were coded as belonging to the category they identify with most. If they did not have a category with which they most identified, they

were coded as 'other'. Income is measured by the relation of household income to a proportion (0–99%, 100–199%, 200–299%, >300%) of the Federal Poverty Level (FPL) for 2001 when data for CHIS 2001 were collected. Education level was based on the respondents self-report of the highest number of years of schooling received (0–11 years, 12 years/H.S.grad., 13–15 years, and 16 or more years). Residential status (urban, suburban, rural) was based on the population density of the zip code in which the respondent resided. Health insurance status refers to the respondent's answer to the question of whether or not she/he was insured at the time of the CHIS-CAM interview. Health status is divided into three categories: cancer, other chronic condition, no chronic condition. Respondents were placed into the cancer group if (i) they had reported ever being diagnosed with cancer (except for non-melanoma skin cancers) by a physician in CHIS 2001, and if they reaffirmed this diagnosis when interviewed for CHIS-CAM or (ii) if they reported such a diagnosis on CHIS-CAM and specified that the diagnosis was first made during the intervening period. Respondents who affirmed that they 'now had' asthma, any other lung or breathing problem, chronic obstructive pulmonary disease, arthritis or rheumatism, back or neck problems, stroke (ever had), diabetes, high blood pressure or hypertension, and depression or anxiety disorder were classed as having a 'chronic condition'. Those with both cancer and one or more chronic conditions were placed in the 'cancer' group. Respondents who reported no chronic conditions or ever being diagnosed with cancer were placed in the 'no chronic condition' category. 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, CA, USA.

### *Outcome Measures*

In this report the primary outcome variables are (i) the (weighted) percentage of respondents who reported visiting specified CAM providers during the 12 months before being interviewed; (ii) the (weighted) percentage of respondents who reported utilizing specified CAM techniques (regular use of two or more dietary supplements in addition to a multivitamin, mind–body techniques, support groups during the 12 months before being interviewed; (iii) the (weighted) percentage of respondents who reported ever praying specifically for their own health and using a special diet to deal with or prevent an illness.

### **Statistical Methods**

The data collected were weighted in order to compensate for the differential probability of selection for each sampled unit, reduce biases arising from the varied characteristics of the respondents, and adjust for under coverage in the sampling frame and surveyed respondents. The weighting of the CHIS-CAM data was initially based on the final weights for CHIS 2001 (23), which included adjustments for non-response to both the screener and interview. These weights were then

adjusted for language eligibility, willingness to participate in follow-up studies, and both subsampling and non-response by stratum (age, gender, cancer status, race/ethnicity, rural–urban residence) in CHIS-CAM.

Analyses reported here consist of weighted frequency estimates of previous CAM use. Comparisons of these estimates using differences in proportions with 95% confidence intervals (CI) in a univariate model and adjusted odds ratios with 95% CI in multivariate models are also shown. Logistic regression using sampling weights based on the Taylor Series Method (as used in SUDAAN) was used to examine the relationship of sociodemographic factors and health status with various types of CAM use.

## **Results**

### **The Sample is Highly Diverse**

The completed CHIS-CAM sample contains 9187 respondents, of whom 1844 reported a diagnosis of cancer in either CHIS 2001 or during the period between the two studies. Selected characteristics of both the CHIS 2001 and CHIS-CAM samples are shown in Table 1. The sample is highly diverse in terms of ethnicity with about 24% of the respondents identifying as Latino, 11% as Asian-American, 6% as African-American and 3% as 'other'. Almost a third of the respondents lived in families where the annual income was less than twice the poverty line, and can thus be considered as 'low income', and 15% were uninsured at the time of the interview. Although slightly more than one-third had graduated from college, 39% had no more than a high school diploma. Just under two-thirds of the group reported having a chronic condition (including cancer). In terms of most characteristics the sample is almost identical to the CHIS 2001 sample which itself was very similar to the California population in the 2000 Census in terms of urban–rural residence, ethnicity. For example, 5.9% of the CHIS sample was African-American as opposed to 5.8% of the state's population as reported in the Census. In no instance did the absolute difference between the CHIS sample and the Census exceed 2% for any racial/ethnic or income category (21). Overall, the major difference between our sample and both the CHIS 2001 samples as well as the California population is in terms of health status where we have only about 35% reporting no chronic illness as opposed to over 55% of the CHIS 2001 sample. This is due to our deliberate selection of individuals diagnosed with cancer and is reflected in that our respondents are older and thus more economically secure. Despite this oversampling of individuals with cancer, CHIS-CAM respondents appear to be diverse and similar to the broader California adult population. Thus, the sample is suitable for examining issues surrounding the relationship of sociodemographic factors and health status to the use of CAM.

### **The Use of CAM in California is High**

Table 2 shows the percentage of the respondents who reported using various CAM providers and other CAM modalities

**Table 1.** CHIS-CAM and CHIS 2001 sample characteristics (unweighted *n*, weighted %)

	<i>n</i>	CHIS-CAM (%)	CHIS 2001 (%)
<b>Gender</b>			
Male	3668	48.5	48.8
Female	5519	51.5	51.2
Total	9187	100	100
<b>Age</b>			
18–35 <sup>a</sup>	1545	32.0	37.2
36–50	3073	32.6	31.3
51–64	2352	19.6	17.1
65+	2216	15.9	14.4
Total	9186	100	100
<b>Race</b>			
White	3660	55.5	55.8
Latino	2267	23.8	23.7
Asian-American and Pacific Islander	1336	11.4	11.3
African-American	961	5.8	5.8
Others	963	3.1	3.1
Total	9187	100	100
<b>Rural/urban</b>			
Urban	3155	40.5	41.1
Second city	2150	18.9	18.8
Suburban	1957	28.7	27.9
Small town–exurban	919	7.2	7.3
Rural	996	4.7	4.8
Total	9187	100	100
<b>Poverty</b>			
0–99%	1313	13.0	14.2
100–199%	1903	18.2	19.7
200–299%	1330	12.9	14.3
300% and above	4641	55.9	51.9
Total	9187	100	100
<b>Education</b>			
Less than high school	1571	14.7	15.7
Grade 12/HS diploma	2154	24.3	26.3
Some college	2511	26.1	27.1
College graduate or more	2951	34.8	30.9
Total	9187	100	100
<b>Insurance</b>			
Insured	8052	85.2	84.3
Not insured	1135	14.8	15.7
Total	9187	100	100
<b>Health status</b>			
Chronic illness, no cancer <sup>b</sup>	4951	57.5	—
No chronic illness <sup>b</sup>	2392	35.3	—
Cancer	1844	7.2	6.4
Total	9187	100	

<sup>a</sup>There are no respondents aged 18 or 19 in the CHIS-CAM data.<sup>b</sup>There is no comparable measure for chronic illness status in CHIS 2001.

(both ‘ever’ and ‘over the past 12 months’). The utilization of specific CAM providers among our respondents is substantial. A full quarter of our respondents had seen a CAM provider in the past 12 months and almost half the group had done so at some time in the past. More specifically, almost 13% of the CHIS-CAM respondents reported visiting a chiropractor in the past 12 months before the interview. Slightly over 14% reported using a massage therapist, whereas 3.0% visited an acupuncturist or practitioner of TCM. The vast majority of visits to CAM providers were concentrated among this limited range of providers. Relatively few respondents reported visiting practitioners such as homeopaths (0.9%), naturopaths (1.1%), Reiki practitioners (1.0%) or curanderos (0.3%).

The use of CAM modalities that do not require visiting a practitioner was considerably greater than the use of those forms that required a visit. For example, in the 12 months before the interview almost 21% used a mind–body intervention to deal with a health problem and 6.6% attended a support group. Very high proportions of the sample reported using some form of dietary therapy to deal with a specific health problem (41.3%), and even more (62.4%) reported using two or more dietary supplements (in addition to any use of a regular multivitamin) to deal with a health problem. Ever praying for one’s own health was reported by 45.4% of the sample.

As there is disagreement about how use of ‘any CAM’ should be operationally defined, ascertaining the rate with which respondents used any form of CAM is difficult. Using a broad definition which includes the use of any of the providers we asked about, as well as mind–body techniques, dietary interventions, two or more dietary supplements in addition to a multivitamin and participation in support groups (but not self-directed prayer, which we measured only for lifetime use), 65.9% of our respondents had used some form of CAM in the year before the interview. This is only modestly lower than the 72.7% of our respondents who have ever used such approaches (again, prayer is excluded). Thus, the vast majority of Californians who ever used CAM have used it recently. Eliminating the use of (2+) dietary supplements from the definition of ‘any CAM’ results in a proportion of 57.8% of our respondents who have used CAM in the past 12 months.

Table 3 shows the relation of selected sociodemographic factors, health insurance and health status to the use of CAM providers, whereas Table 4 presents the relation of these factors to the use of other, non-provider based, forms of CAM (weighted percentages, 95% CIs, adjusted odds ratios, 95% CIs). The odds ratios are adjusted to show the impact of the variable in question on the use of a specific type of CAM while controlling for the impact of all other variables in the model.

### Overall, Women Use CAM More Than Men

As expected, the results show that being ‘female’ has a positive relation with the use of most CAM providers (chiropractors are the single exception), as well as with the use of special diets, dietary supplements, mind–body interventions, prayer and support groups. The positive relation of CAM use and being



**Table 2.** The use of selected CAM providers and modalities in California (CHIS-CAM) (unweighted *n*, weighted %)

	Ever use CHIS-CAM		Past 12 months CHIS-CAM	
	<i>n</i>	%	<i>n</i>	%
<b>CAM provider</b>				
Chiropractor	3550	36.0	1159	13.0
Massage therapist	2208	23.4	1246	14.2
Acupuncturist	1183	10.5	319	3.0
Traditional Chinese medicine	464	3.9	179	1.5
Osteopath	463	4.8	99	1.1
Curandero	109	1.2	34	0.3
Naturopath	253	2.4	84	1.1
Homeopath	412	3.8	106	0.9
Native American healer	155	0.7	45	0.1
Ayurvedic	71	0.7	23	0.2
Reiki practitioner	215	1.9	91	1.0
Any provider	4710	49.1	2275	25.0
Two or more providers	2397	23.4	782	8.1
Three or more providers	1018	9.3	243	2.5
<b>CAM modalities</b>				
Special diet	4190	46.4	3759	41.3
2+ dietary supplements <sup>a</sup>	—	—	6148	80.4
Mind–body techniques <sup>b</sup>	2257	23.1	2048	20.8
Ever pray for own health	4666	45.4	—	—
Support groups	1214	11.3	684	6.6
Any CAM use	7191	74.5	—	—
Any CAM except prayer	6743	72.7	6041	66.2
Any CAM except 2+ dietary supplements	—	—	5317	57.8

<sup>a</sup>Two or more from a list of 30 dietary supplements including vitamin A, vitamin B, vitamin C, vitamin D, vitamin E, lycopene, folic acid, calcium, selenium, zinc, glucosamine, echinacea, fish oil, garlic pills, green tea, ginko biloba, melatonin, valerian, soy products, black cohosh, DHEA, ma huang, saw palmetto, shark cartilage, dong quai, ginseng, St John's wort, PC-SPES, mistletoe and other (specified by respondent).

<sup>b</sup>The four mind–body techniques include imagery or guided imagery, meditation, hypnosis or self-hypnosis and biofeedback.

female is independent of age, ethnicity, income, education or health status. That women in California visit chiropractors at about the same rate as men is itself striking, as the use of chiropractic has been associated with males (24).

### Regardless of Their Health, Those Over 65 years Are Least Likely to Use CAM

The relation between 'age' and CAM provider use is not as clear as that of gender. In general, use rises gradually with age and then declines more sharply among the oldest (65+) respondents. This pattern can be seen for those using each type of CAM provider. But when health status and the other demographic are taken into account the impact of age is less clear with only those over age 65 showing a drop off in use. A similar pattern can be seen in the case of both dietary

therapies and mind–body techniques. However, the use of dietary supplements, prayer and support groups appear largely unrelated to age.

### The Impact of Racial and Ethnic Identity on CAM Use Differs for Each Type of CAM

Among Californians, identification with a particular 'racial/ethnic group' has a somewhat distinct relation to the utilization of CAM. Our findings do not support the oft stated view that CAM utilization among whites is consistently higher than that found among other groups. Although whites do report greater use of some types of CAM such as chiropractors and massage therapists, this elevated level of use is not found for many other CAM modalities. For example, Asian/Pacific Islanders have the highest use of acupuncture/TCM, and African-Americans are most likely to report praying for their health. In other instances, the differences between whites and other groups are minimal. Latinos consistently report a lower level of use than whites and other racial/ethnic groups on every measure of CAM utilization except self-directed prayer, where they report more use than any other group except for African-Americans. Although other relations between race/ethnicity and CAM use can be described (e.g. African-Americans use some non-provider based forms of CAM such as special diets, dietary supplements and support groups at the same rate as whites, while using others such as mind–body techniques less often, Asian/Pacific Islanders are less likely to report using prayer or support groups), it is difficult to find a consistent pattern. At least among our respondents, it appears that the relation of race/ethnicity and CAM use is complex and varies considerably by group as well as by what type of CAM is being used.

### Those With More Money Make Greater Use of CAM Providers, But Not Other Forms of CAM

The relationship of family 'income' to utilization is consistent for most forms of CAM. The utilization of every type of CAM provider increases as family income rises. The same trend is evident for every measure of non-provider based CAM with the exception of self-directed prayer. However, once the other variables in the model are included, the impact of income on CAM use vanishes for the non-provider based forms of CAM. Again, the exception is self-directed prayer where use clearly declines as income goes up, even when other variables in the model are included. The use of CAM providers in California is positively associated with economic security, whereas the use of most other forms of CAM is not.

### The More Education People Have, the More Likely They are to Use CAM

'Educational attainment' is another factor showing a consistent relation to the use of 'any' CAM provider as well most specific provider types. Respondents having the lowest levels of education are least likely to use CAM, and use typically rises with

**Table 3.** Demographic and health characteristics and the prevalence of selected CAM providers within the past 12 months (weighted %, adjusted odds ratios<sup>a</sup>, 95% CI)

	Any provider (n = 2275)		Chiropractor (n = 1159)		Massage therapist (n = 1246)		Acupuncture (n = 319)		Other (n = 412)	
	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)
<b>Sex</b>										
Male	21.9	1.00	12.4	1.00	10.8	1.00	2.0	1.00	3.2	1.00
Female	27.9	1.39 (1.15, 1.67)**	13.5	1.08 (0.85, 1.37)	17.4	1.79 (1.41, 2.27)***	3.9	1.93 (1.25, 2.99)**	5.1	1.61 (1.06, 2.44)*
<b>Age</b>										
18–35	22.3	1.00	11.3	1.00	14.2	1.00	2.2	1.00	3.0	1.00
36–50	27.8	1.01 (0.77, 1.32)	14.5	1.03 (0.71, 1.47)	16.1	0.82 (0.60, 1.13)	2.9	1.02 (0.44, 2.32)	5.4	1.40 (0.84, 2.33)
51–64	31.0	0.91 (0.68, 1.22)	16.5	0.92 (0.62, 1.37)	16.8	0.67 (0.47, 0.94)*	4.3	1.20 (0.48, 3.03)	5.5	1.12 (0.65, 1.92)
65+	17.3	0.43 (0.30, 0.60)***	8.8	0.45 (0.29, 0.71)***	7.3	0.27 (0.17, 0.43)***	2.8	0.88 (0.31, 2.50)	2.4	0.48 (0.21, 1.09)
<b>Race</b>										
White	30.4	1.00	16.3	1.00	18.2	1.00	3.1	1.00	5.4	1.00
Latino	13.1	0.50 (0.38, 0.65)***	7.7	0.62 (0.44, 0.86)**	6.2	0.44 (0.31, 0.62)***	1.3	0.69 (0.35, 1.35)	1.9	0.55 (0.31, 0.97)*
Asian and Pacific Islander	26.2	0.85 (0.67, 1.08)	9.4	0.57 (0.41, 0.86)***	11.3	0.55 (0.41, 0.74)***	5.9	2.19 (1.35, 3.56)**	3.6	0.68 (0.42, 1.09)
African-American	19.5	0.59 (0.45, 0.78)***	10.0	0.62 (0.43, 0.88)**	12.9	0.73 (0.52, 1.01)	2.4	0.90 (0.43, 1.89)	1.7	0.31 (0.16, 0.61)***
Other	25.8	0.85 (0.63, 1.15)	11.6	0.69 (0.48, 1.00)*	16.5	0.99 (0.68, 1.42)	3.2	1.32 (0.72, 2.45)	5.8	1.25 (0.74, 2.12)
<b>Poverty level</b>										
0–99%	13.2	1.00	6.6	1.00	6.0	1.00	1.6	1.00	2.7	1.00
100–199%	16.5	1.23 (0.85, 1.78)	8.4	1.22 (0.78, 1.91)	8.4	1.42 (0.84, 2.38)	2.3	1.46 (0.73, 2.89)	2.4	0.75 (0.29, 1.92)
200–299%	22.5	1.50 (0.98, 2.29)	10.3	1.35 (0.84, 2.18)	11.4	1.55 (0.86, 2.79)	2.5	1.49 (0.73, 3.04)	2.9	0.70 (0.26, 1.89)
300% and above	31.1	1.92 (1.32, 2.78)***	16.6	2.09 (1.37, 3.18)***	18.7	2.20 (1.34, 3.60)**	3.6	1.84 (0.96, 3.54)	5.4	0.96 (0.36, 2.53)
<b>Education</b>										
Less than high school	11.6	1.00	6.0	1.00	5.3	1.00	1.6	1.00	1.4	1.00
Grade 12/HS diploma	21.4	1.30 (0.91, 1.86)	13.3	1.54 (0.97, 2.47)	10.7	1.19 (0.70, 2.02)	2.0	0.87 (0.41, 1.86)	2.7	1.51 (0.74, 3.07)
Some college	27.3	1.63 (1.14, 2.34)**	13.5	1.43 (0.89, 2.29)	15.5	1.60 (0.96, 2.67)	2.7	1.19 (0.58, 2.40)	4.7	2.50 (1.13, 5.55)*
College graduate or more	31.5	1.68 (1.15, 2.45)**	15.2	1.39 (0.83, 2.31)	19.5	1.88 (1.10, 3.20)*	4.4	1.69 (0.82, 3.48)	6.0	2.87 (1.34, 6.13)**
<b>Health status</b>										
No chronic illness or cancer	18.3	1.00	8.2	1.00	11.0	1.00	1.2	1.00	2.5	1.00
Chronic illness/no cancer	28.9	1.87 (1.49, 2.35)***	15.7	2.14 (1.56, 2.93)***	16.3	1.45 (1.02, 2.06)***	3.9	3.25 (1.79, 5.87)***	5.2	2.07 (1.25, 3.43)**
Cancer	26.7	1.82 (1.37, 2.41)***	14.7	2.18 (1.50, 3.17)***	13.2	1.67 (1.26, 2.21)*	3.4	2.90 (1.47, 5.73)**	4.2	1.73 (0.97, 3.09)
<b>Insurance status</b>										
Insured	26.2	1.00	13.5	1.00	15.2	1.00	3.0	1.00	4.5	1.00
Uninsured	18.9	1.10 (0.84, 1.44)	9.9	1.09 (0.76, 1.55)	8.9	0.91 (0.64, 1.30)	2.9	1.62 (0.90, 2.93)	2.7	0.95 (0.51, 1.80)

<sup>a</sup>Adjusted odds ratios from a multiple logistic regression, with use of selected CAM providers as the dependent variable and sex, age, race, poverty level, education, health status and insurance status as independent variables.

\**P* < 0.05, \*\**P* < 0.01, \*\*\**P* < 0.001.

**Table 4.** Demographic and health characteristics and the prevalence of selected CAM modalities within the past 12 months (weighted %, adjusted odds ratios<sup>a</sup>, 95% CI)

	Special diet (n = 3759)		2+ dietary supplements (n = 6148)		Mind-body techniques (n = 2048)		Ever pray (n = 4666)		Support groups (n = 684)	
	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)	Prevalence	Adjusted OR (95% CI)
<b>Sex</b>										
Male	36.6	1.00	76.3	1.00	17.5	1.00	37.1	1.00	4.5	1.00
Female	45.8	1.46 (1.24, 1.72)***	83.9	1.59 (1.25, 2.01)***	24.0	1.46 (1.18, 1.79)***	53.2	1.87 (1.59, 2.19)***	8.5	1.85 (1.37, 2.50)***
<b>Age</b>										
18–35	35.6	1.00	73.7	1.00	19.6	1.00	41.5	1.00	5.3	1.00
36–50	44.5	1.14 (0.91, 1.43)	82.1	1.40 (1.03, 1.92)*	21.4	0.84 (0.63, 1.13)	46.7	1.17 (0.93, 1.47)	6.7	1.03 (0.65, 1.62)
51–64	48.3	1.06 (0.82, 1.36)	83.6	1.31 (0.92, 1.87)	25.4	0.82 (0.60, 1.12)	47.7	1.07 (0.83, 1.38)	7.5	0.91 (0.55, 1.49)
65+	37.6	0.72 (0.54, 0.96)*	84.7	1.47 (1.01, 2.14)*	16.6	0.45 (0.31, 0.64)***	47.8	0.97 (0.73, 1.29)	7.9	0.90 (0.52, 1.56)
<b>Race</b>										
White	46.2	1.00	83.0	1.00	24.9	1.00	44.0	1.00	7.9	1.00
Latino	30.6	0.79 (0.62, 1.00)	71.7	0.86 (0.62, 1.21)	12.4	0.68 (0.50, 0.93)*	48.9	1.39 (1.10, 1.76)**	4.3	0.67 (0.44, 1.03)
Asian and Pacific Islander	38.5	0.77 (0.62, 0.95)*	79.9	0.94 (0.69, 1.28)	18.2	0.67 (0.51, 0.89)**	34.6	0.72 (0.59, 0.90)**	3.8	0.51 (0.33, 0.80)**
African-American	44.3	0.99 (0.79, 1.23)	81.8	1.05 (0.76, 1.45)	19.8	0.80 (0.62, 1.03)	66.0	2.61 (2.07, 3.30)***	9.1	1.25 (0.88, 1.78)
Other	41.7	0.98 (0.75, 1.28)	83.6	1.32 (0.86, 2.03)	24.6	1.15 (0.84, 1.57)	44.6	1.13 (0.86, 1.49)	5.5	0.74 (0.48, 1.15)
<b>Poverty level</b>										
0–99%	31.5	1.00	71.5	1.00	12.2	1.00	51.3	1.00	5.7	1.00
100–199%	34.5	1.05 (0.77, 1.42)	77.7	1.18 (0.80, 1.76)	18.7	1.44 (0.95, 2.18)	49.5	0.93 (0.70, 1.23)	5.5	0.89 (0.50, 1.57)
200–299%	37.3	1.00 (0.71, 1.41)	80.5	1.26 (0.80, 1.97)	17.9	1.03 (0.66, 1.61)	48.2	0.88 (0.63, 1.22)	6.6	1.00 (0.53, 1.90)
300% and above	46.7	1.23 (0.89, 1.69)	82.6	1.28 (0.84, 1.96)	24.2	1.12 (0.74, 1.68)	42.1	0.69 (0.51, 0.94)*	7.1	1.04 (0.57, 1.88)
<b>Education</b>										
Less than high school	27.5	1.00	68.5	1.00	7.4	1.00	47.3	1.00	4.6	1.00
Grade 12/HS diploma	33.7	1.12 (0.83, 1.52)	77.0	1.45 (1.01, 2.06)*	14.1	1.81 (1.25, 2.62)**	45.4	1.17 (0.90, 1.52)	6.1	1.12 (0.67, 1.87)
Some college	46.0	1.78 (1.31, 2.41)***	82.7	1.96 (1.34, 2.87)***	24.9	3.62 (2.54, 5.15)***	47.0	1.22 (0.94, 1.60)	7.5	1.29 (0.76, 2.18)
College graduate or more	48.9	1.90 (1.38, 2.63)***	84.1	2.13 (1.43, 3.16)***	28.2	4.52 (3.12, 6.57)***	43.3	1.31 (0.99, 1.73)	7.0	1.22 (0.71, 2.09)
<b>Health status</b>										
No chronic illness or cancer	31.0	1.00	73.7	1.00	14.6	1.00	35.5	1.00	3.5	1.00
Chronic illness/no cancer	48.3	2.05 (1.70, 2.48)***	83.1	1.57 (1.20, 2.06)**	24.0	1.92 (1.48, 2.51)***	49.9	1.85 (1.53, 2.23)***	7.9	2.22 (1.44, 3.42)***
Cancer	36.1	1.20 (0.94, 1.54)	86.5	1.74 (1.24, 2.45)**	26.3	2.34 (1.71, 3.19)***	58.4	2.72 (2.11, 3.51)***	11.3	3.09 (1.86, 5.14)***
<b>Insurance status</b>										
Insured	43.0	1.00	81.1	1.00	21.6	1.00	45.0	1.00	6.7	1.00
Uninsured	32.5	0.90 (0.71, 1.14)	75.5	1.14 (0.83, 1.57)	17.1	1.15 (0.85, 1.55)	47.4	1.05 (0.84, 1.31)	5.7	1.17 (0.75, 1.82)

<sup>a</sup>Adjusted odds ratios from a multiple logistic regression, with use of selected CAM modalities as the dependent variable and sex, age, race, poverty level, education, health status and insurance status as independent variables.  
\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.



educational level. For example, even when income, race/ethnicity and other factors are taken into account, those with a college degree are almost twice as likely to have used a massage therapist in the past year, and more than twice as likely to have used an acupuncture/TCM practitioner, or other type of CAM provider than those without a high school diploma. The pattern is similar for the use of therapeutic diets, dietary supplements and especially pronounced for mind-body techniques. The exceptions to this pattern are the use of self-directed prayer and attendance at support groups which appear unrelated to education.

Having 'health insurance' coverage at the time of the interview appears to have a very modest association with the use of CAM providers among our respondents. For example, although 26.2% of those with insurance have seen a provider in the past year, only 18.9% of those without insurance have done so. But once the other factors are included in the analysis the impact of insurance coverage disappears. Given this lack of association for the use of CAM providers, it is not surprising to find that current insurance coverage has no impact on the non-provider based forms of CAM.

#### **Suffering from a Chronic Condition is the Key Factor Associated with CAM Use**

'Health status', here defined as either not having a chronic illness, having been diagnosed with cancer, or having been diagnosed with at least 1 of 10 other chronic conditions, but not cancer, is clearly related to CAM use. As expected, the use of every form of CAM is considerably lower among those not reporting cancer or another chronic condition. The utilization of CAM providers, dietary supplements and mind-body techniques among those with cancer is not distinctly different than that of those reporting other chronic conditions. However, those in the cancer group are considerably less apt (36.1% versus 48.3%) to report employing dietary therapies, and more apt to report self-directed prayer (58.4% versus 49.9%), and attending support groups (11.3% versus 7.9%). These differences in CAM utilization by health status remain after accounting for all of the other sociodemographic factors.

## **Discussion**

### **Study Limitations**

The results we have reported need to be considered within the limitations of our research. All the data derive from self-reports which have the potential to be selective. Our measure of health status may be confounded by the fact that we include individuals with both cancer and one or more other chronic conditions in the same category as those respondents who have only cancer. In addition, our measures of cancer and chronic illness do not take into account severity, time since diagnosis, functional limitation or other mitigating factors into assessing health status. Questions regarding the adequacy of our sample emerge from the low response rate to CHIS 2001

from which our follow-up panel was drawn. Additional concerns about the sample arise from the fact that while our interview completion rate for those potential sample participants we were able to contact was satisfactory, we were not able to locate a significant proportion of the intended respondents. These concerns are somewhat mitigated by the fact that our goal of maximizing the inclusion of respondents who had been diagnosed with cancer meant that the sample was never intended to be representative of the California population. Despite these caveats, the completed sample is large and highly diverse, and we have no reason to believe that it is unsuitable as a basis for making analytic comparisons between sociodemographic factors, health status and CAM use.

## **Conclusions**

### *The Impact of Sociodemographic Factors on CAM Use Differs for Different Types of CAM*

Clearly, the use of CAM among Californians is substantial. Our results offer support and provide increased specificity for the findings of earlier studies (25,26) that residence on the west coast is associated with high utilization of CAM. It is also evident that despite the high proportion of respondents with chronic illnesses including cancer, the factors associated with greater CAM use among our respondents are somewhat similar to those reported in studies of the general population. Women are more likely to use almost every type of CAM just as they are more likely to use conventional health care services. Our oldest respondents (65+) are significantly less likely to use most types of CAM. Given that the oldest respondents may well have the greatest need for health care of every type, it may be that this somewhat paradoxical (but not surprising) result may be due to generational or cohort factors that have left those over a certain age less likely to be knowledgeable about CAM or comfortable about using it (27). The influence of age on use is much less clear for those who are younger.

Our findings on the relation of race and ethnicity to CAM use challenge the common assertion that whites are generally most apt to use CAM, while supporting the view Latinos are the least likely to use it. Beyond such broad associations our findings point to a complicated set of relations between race/ethnicity and CAM use. Our data make it clear that the health status, other demographic factors and the specific type of CAM all are important in understanding how utilization patterns vary by race/ethnicity. Not surprisingly, having a higher income is associated with the increased use of CAM providers. But income has little, if any, influence on the use of non-provider based forms of CAM. Our findings that, once health status and other demographic factors are taken into account, current health insurance coverage has no impact on CAM use is consistent and clear. Speculation that individuals without coverage for conventional care use CAM as a substitute, or that those with coverage will be more likely to use provider-based CAM modalities such as chiropractic are not borne out

by our findings. As in many other studies, we find that greater educational attainment is strongly associated with most forms of CAM use (prayer and support groups are the exceptions).

### *The Key Factor in CAM Use is Need: Having a Chronic Condition*

Perhaps the most important factor associated with CAM use is need; here defined as having been diagnosed with cancer or 1 of 10 other chronic conditions. Overall, those with cancer are not more likely to use CAM overall than those suffering from other chronic conditions, although their use of some types of CAM appears to be distinct. For example, the use of most provider-based forms of CAM is roughly the same or less among those with cancer than it is among those with other chronic conditions, while the use of dietary therapies is clearly less, and the use of prayer and support groups is higher. These patterns may be due to the use of CAM to ameliorate the psychological distress that is typically associated with a diagnosis of cancer.

Factors associated with CAM use in California are complex, moderated by many sociodemographic factors as well as health status, and vary by the type of CAM in question. At the broadest level it is now possible to assert that CAM use in California has become the norm. Without including prayer, and regardless of health status, about two-thirds of our respondents had used some form of CAM in the past year. Astin (28) found that being a 'culturally creative' individual was strongly associated with CAM use, especially for those with chronic conditions. It may be that California offers a social milieu that is more open to such a 'culturally creative' lifestyle. When combined with a relatively affluent, well-educated and ethnically diverse population, such an environment may facilitate the adaptation of all sorts of innovative responses to problems, including the use of CAM to help deal with chronic illness. California has long been associated with the initiation of attitudinal and behavioral trends that later become manifest throughout the nation. Thus, California's openness to CAM may indicate even greater heightened national receptivity to CAM in the future.

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