Insurance Coverage, Medical Conditions, and Visits to Alternative Medicine Providers

Results of a National Survey

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Background: In 1997, patients made an estimated 629 million visits to complementary and alternative medicine (CAM) providers; however, little is known about factors associated with visits to CAM providers.

Objective: To examine the effect of insurance coverage on frequency of use of CAM providers.

Methods: We conducted a nationally representative, random household telephone survey of 2055 adults.

Main Outcome Measure: The number of visits made to CAM providers.

Results: An estimated 44% of the US population used at least 1 CAM therapy in 1997. Of those using CAM, 52% had seen at least 1 CAM provider in the last year. Among those who used a CAM therapy, factors independently associated with seeing a provider were having been in the upper quartile of visits to conventional providers in the last year (adjusted odds ratio [AOR], 2.00; 95% confidence interval [CI], 1.33-3.01), female sex (AOR, 1.67; 95% CI, 1.17-2.38), and having used the therapy to treat diabetes (AOR, 5.20; 95% CI, 1.40-19.40), cancer (AOR, 2.99; 95% CI, 1.04-8.62), or back or neck problems (AOR, 1.51; 95% CI, 1.02-2.23). Factors independently associated with frequent use (≥8 visits per year) of a CAM provider were full insurance coverage of the CAM provider (AOR, 5.06; 95% CI, 2.45-10.47), partial insurance coverage (AOR, 3.26; 95% CI, 1.72-6.19), having used the therapy for wellness (AOR, 2.85; 95% CI, 1.63-4.98), and having seen the provider for back or neck problems (AOR, 2.26; 95% CI, 1.29-3.94). Conservative extrapolation to national estimates suggests that 8.9% of the population (17.5 million adults) accounted for more than 75% of the 629 million visits made to CAM providers in 1997.

Conclusions: A small minority of persons accounted for more than 75% of visits to CAM providers. Extent of insurance coverage for CAM providers and use for wellness are strong correlates of frequent use of CAM providers.

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National surveys demonstrate a substantial and growing number of visits to complementary and alternative medicine (CAM) providers. In 1990, there were 1.1 times more visits to CAM providers than to primary care physicians; in 1997, this ratio increased to 1.6 and amounted to 629 million CAM provider visits. Despite the medical and health policy importance of this large and increasing number of visits to CAM providers, few data are available examining factors associated with use or frequent use of these providers.

Extensive conventional health services research has noted many factors to be correlated with increased frequency of ambulatory service utilization, including female sex, older age, worse health status, presence of health insurance, health maintenance organization enrollment, and presence of a psychiatric disorder. For chiropractic care, extent of insurance coverage and provision of health promotion and disease prevention are correlates of more frequent visits. In one study of the effect of insurance coverage on visit frequency, Shekelle and colleagues reported that those with full coverage made twice as many visits to chiropractors compared with those with no coverage or those participating in a 25% cost-sharing plan. Correlates of use of chiropractors have not been examined in a national sample. The effect of CAM provider insurance coverage on other factors on frequency of CAM provider use for providers other than chiropractors has not been examined previously. Therefore, our objective was to investigate patterns and correlates of use and frequent use of CAM providers, using data available from a national survey.

RESULTS

Overall, 2055 respondents completed the survey, of whom 914 (44% weighted) reported using at least 1 CAM therapy in the
METHODS

SURVEY DESIGN AND RESPONSE RATE

We conducted a nationally representative telephone survey between November 1, 1997, and February 28, 1998. We used random-digit dialing with random selection of 1 English-speaking household resident 18 years or older. We weighted the data to adjust for geographic variation in response rates and for variation in household size and the probability of selection. We used sociodemographic variables to adjust for aggregate discrepancies between the sample distributions and population distributions provided by the US Census Bureau.

We presented the interview as a survey conducted about the health care of Americans with no mention of alternative or complementary therapies. Questions began with assessment of current health status, interactions with physicians, and personal experience during the last 12 months with common medical conditions. We then asked about the use of CAM therapies. The CAM therapies consisted of a core list of 15 modalities outlined in previous work (relaxation techniques, herbal medicine, massage, chiropractic, megavitamins, self-help group, imagery, commercial diet, folk remedies, lifestyle diet, energy healing, homeopathy, hypnosis, biofeedback, and acupuncture) as well as additional CAM therapies that are less easily defined and were used less frequently than those in the core list. Therapies specifically not included in the definition of CAM for our analyses were spiritual healing by others, self-prayer, and exercise. For a random sample of up to 3 CAM therapies used by the respondent, we asked in-depth questions about the use of this modality. We have published previously additional details of the sampling methods and interview. The study methods were approved by the institutional review board at Beth Israel Deaconess Medical Center.

We obtained a 60% weighted overall response rate among eligible respondents. The characteristics of the subjects interviewed were similar to the population distributions published by the US Census Bureau. Specific respondent characteristics, additional details of the weighting procedures, and general survey results have been published previously.

ANALYSIS

We determined the total number of visits made to CAM providers by each respondent by an exact count for those reporting use of 3 or fewer different CAM therapies. For the 21% of CAM users who reported use of 4 or more different CAM therapies, exact counts were available only for the 3 randomly selected therapies. To use these respondents in the descriptive analysis, we estimated the total number of CAM providers seen and the number of visits made for each additional CAM therapy.

The likely number of visits made for each additional CAM therapy in question was estimated by multiplying the probability that a person using the CAM modality in question would have seen a provider by the mean number of visits made to that type of provider. For these probabilities, we examined respondents who gave detailed information on the use of the CAM modality in question and determined the average probability of seeing a CAM provider and the average number of visits made among those reporting use of a provider.

To estimate the number of different types of CAM providers seen by respondents who used more than 3 CAM modalities, we added the number of the modalities for which they actually reported seeing a provider (eg, 0, 1, 2, or 3) to the probabilities that they saw a provider for the additional CAM modalities in question. These probabilities were determined as described herein. The mean number of different types of CAM providers seen was then rounded up or down as appropriate (for example, if a respondent was estimated to have seen 1.3 different CAM providers, he or she was classified as having seen 1 CAM provider).

Regression analyses used data on therapies for which exact counts were available and did not use any estimated data. The following example illustrates the estimation techniques used. A respondent used 4 CAM modalities (herbal therapies, chiropractic, acupuncture, and massage) and was randomly asked specific details about all therapies except massage. The respondent reported no provider use for herbal therapies but saw an acupuncturist 3 times and a chiropractor 9 times. Information given by other respondents who gave detailed information regarding their use of massage demonstrated that 60% reported use of a massage provider and those using providers made an average of 8.0...
visits for massage. For this respondent, the estimated total number of visits made to CAM providers was $3 + 9 + (10.6 \times 8) = 16.8$, whereas the estimated number of CAM providers seen was $3$ (rounded up from $2.6$).

We performed 2 primary multivariable logistic regression analyses. In the first analysis, we determined factors associated with visiting a provider for a given CAM therapy among respondents who had reported use of at least 1 CAM therapy in the last year. We excluded patients seen for chiropractic and acupuncture treatment since nearly all patients who reported use of these modalities saw providers. This analysis distinguished use of CAM as self-care (eg, getting a massage from a friend) from use of a CAM professional (eg, seeing a massage therapist). The percentage of respondents seeing a professional ranged from 6% for folk remedies to 63% for hypnosis. In the second analysis, we determined factors associated with high-frequency use of a given type of CAM provider among respondents who reported making at least 1 visit to at least 1 type of CAM provider in the last year (including chiropractic and acupuncture). We defined a high-frequency user of a CAM provider as a respondent who made 8 or more visits to a given type of CAM provider in the last year, which corresponded to the upper tertile of visits made to any 1 type of CAM provider. Because we collected data on up to 3 different CAM therapies, a respondent could be classified as a high-frequency user of up to 3 different therapies. For example, a respondent who visited a chiropractor 9 times and a massage therapist 5 times in the last year was classified as a high-frequency user of chiropractic but not of massage therapy.

For our analyses, we assessed the strength of bi-variable associations between the independent variable and other factors, including patient characteristics. Factors evaluated for significance in both models were sociodemographic variables, measures of current health status, prior use of conventional medical care, and reasons for seeing the CAM provider. For the model investigating factors associated with frequent CAM provider use, we also evaluated the associations with extent of insurance coverage provided for the specific type of CAM practitioner seen.

Sociodemographic variables included sex, quintile of age, race (white vs other), educational level (college graduate or higher vs others), household income, household size, type of conventional health insurance (health maintenance organization, private, Medicare or Medicaid, other, or none), national region of residence (East, West, Northeast, South), and town size (as quartiles). Measures of current health status included very good or excellent self-rated health and having 3 or more self-reported medical problems. Presence of a psychiatric disorder was assessed via self-report of difficulties with anxiety attacks or severe depression during the last 12 months or having seen a mental health professional during the last 12 months for 1 of their 3 most concerning medical problems. We classified a respondent as a high user of conventional medical care if his or her report of the number of visits made to physicians or assistants for a health problem or a checkup in the last year was in the upper quartile of responses. Reasons for seeing the CAM provider included the common medical problems for which the respondent had seen the CAM provider (back or neck problems, allergies, headaches or other chronic pain, lung problems, arthritis, cancer, diabetes, heart problems, gastrointestinal complaints, and fatigue) and whether the respondent had used the therapy for wellness. Extent of insurance coverage was classified as none, partial, or full. We were unable to investigate the association between insurance coverage and any use of a CAM provider because we did not have CAM insurance information for respondents who did not report visits to providers.

We used a backward elimination procedure to create the final models. Analyses were restricted to variables significant at $P<.20$ in our bivariable analyses. We performed secondary analyses to examine high-frequency CAM provider use of “manipulative” providers only (chiropractic and massage) and “nonmanipulative” providers only (all CAM providers except chiropractic and massage). Because of more limited sample sizes, these analyses were restricted to variables significant in the primary analysis. In our analysis of frequent CAM provider use, 24% of respondents contributed information on visits to more than one type of provider. In our analysis of any CAM provider use, 54% of respondents contributed information on use of more than 1 CAM therapy. To control for type of modality used to the greatest extent possible, all models were adjusted for therapies used by more than 3% of respondents. We used modeling by linear regression with generalized estimating equations, accounting for patient-level clustering where the unit of observation was person therapy. All analyses were performed using SUDAAN statistical software (Research Triangle Institute, Research Triangle Park, NC) with appropriate weighting and nesting variables.

The 397 respondents (19% weighted) who gave detailed information on visits to CAM providers provided data on 576 respondent–CAM provider relationships because some respondents saw more than 1 type of CAM provider. The adjusted odds ratios for the factors associated with frequent use of a given type of CAM pro-

 Combined were 14.6 and 7.4, respectively. The distributions of total number of visits made to all types of CAM providers combined and to conventional physicians in the last 12 months are shown in Figure 2. Approximately 26% of respondents made at least 1 visit to a CAM provider. Although the distribution of visits to CAM providers varied based on type of modality used, the percentage of users who made 8 or more visits was generally comparable across the more frequently used modalities. There was no statistical difference in the percentage of patients who made 8 or more visits to CAM providers for providers seen by more than 5% of respondents (chiropractic, massage, relaxation techniques, diet programs) compared with those who saw other types of providers ($P = .28$). Those respondents whose estimated total number of visits to all CAM providers combined was in
The factors independently associated with being a high-frequency user of a specific type of CAM therapy were full or partial insurance coverage of the CAM provider (compared with no coverage of CAM provider), having used the therapy for wellness, and having seen the provider for back or neck problems. Other factors, including age, sex, socioeconomic status, health status measures, presence of a psychiatric disorder, and region of residence, were not significantly associated with high-frequency CAM provider use. Being in the upper quartile of visits to conventional providers was not associated with high-frequency CAM provider use in bivariable (P = .10) or multivariable (P = .30) analyses.

Results of secondary analyses specifically focused on manipulative (chiropractic or massage) or nonmanipulative providers are also given in Table 2. For manipulative providers, full insurance coverage, partial insurance coverage, and using the therapy for wellness were associated with high-frequency provider use. Full and partial insurance coverage emerged as particularly strong correlates of frequent CAM provider use for manipulative providers. Among respondents visiting these providers, 63% of those reporting full insurance coverage of these providers made 8 or more visits in the last year, whereas only 17% of those reporting no insurance coverage of these providers made 8 or more visits. For nonmanipulative providers, the only factor from the primary model significantly associated with high-frequency provider use was having used the therapy for wellness.

Table 1. Factors Independently Associated With Use of Complementary and Alternative Medicine (CAM) Professionals Among Respondents Using CAM Therapies in the Last Year*

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Respondents Seeing CAM Provider, %</th>
<th>Adjusted Odds Ratio (95% Confidence Interval)†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Among Those With Patient Characteristic</td>
<td>Among Those Without Patient Characteristic</td>
</tr>
<tr>
<td>Upper quartile of visits made to conventional providers‡</td>
<td>38.0</td>
<td>22.5</td>
</tr>
<tr>
<td>Female</td>
<td>29.9</td>
<td>20.3</td>
</tr>
<tr>
<td>Used CAM therapy for diabetes mellitus</td>
<td>52.1</td>
<td>25.8</td>
</tr>
<tr>
<td>Used CAM therapy for cancer</td>
<td>53.5</td>
<td>26.0</td>
</tr>
<tr>
<td>Used CAM therapy for back or neck problems</td>
<td>41.1</td>
<td>22.0</td>
</tr>
</tbody>
</table>

*Users of chiropractic and acupuncture therapy were excluded from this analysis because nearly all respondents using these modalities saw providers.†Adjusted for provider type for therapies used by greater than 3% of respondents (herbal therapies, vitamin therapies, diet programs, lifestyle diets, relaxation techniques, massage, folk remedies, self-help groups, aromatherapy).‡Those in the upper quartile of visits to conventional providers reported 5 or more visits within the last year.
We examined whether the effect of full insurance was significantly different than partial coverage by creating a model using partial coverage as the reference group. The effect of full insurance coverage was not significantly different than partial coverage for either the primary model or the manipulative therapy provider model ($P = .22$ and $P = .24$, respectively).

### COMMENT

A small minority of people who used CAM providers accounted for most of the overall visits made to those providers, in a pattern similar to that demonstrated for use of conventional medical care.17,18 Although CAM was used by approximately 44% of the population, our study suggests that only 8.9% of the population accounted for more than 75% of the 629 million visits estimated to have been made to CAM providers in 1997. Insurance coverage of CAM providers and having used the CAM therapy for wellness were the strongest correlates of high-frequency CAM provider use.

Extent of insurance coverage emerged as a strong correlate of high-frequency use of CAM providers, particularly in the case of manipulative therapies. We are uncertain whether this represents selection bias (eg, people chose plans that covered CAM providers because they planned to use CAM therapies) or moral hazard (eg, people used more because they were given coverage). A report of a 70% increase in chiropractic use after addition of mandatory coverage and other randomized controlled studies of chiropractic insurance coverage suggest moral hazard may play an important role.15,19 Our results suggest that insurance coverage may play an important role in determining the number of visits that will be made to CAM providers in the future. However, since the relationship between high-frequency CAM provider use and insurance coverage seems to have been strongly driven by the subset of manipulative therapies, effects may be most dramatic for visits to chiropractic and massage provider. With current trends of providing increased insurance coverage for CAM modalities,20 CAM provider visits may continue to increase dramatically.

Using a CAM therapy for wellness is associated with frequent CAM provider use. The desire for wellness and preventive care has been suggested elsewhere as a primary motivation for the use of CAM.21,22 Previous research suggests that obtaining this care from conventional and unconventional sources is important to CAM users. For example, Druss and Rosenheck23 found that persons making visits to CAM providers and conventional providers were more likely than persons visiting only conventional providers to report having obtained commonly used preventive services, including blood pressure and cholesterol levels and prostate and breast cancer screening. Astin et al24 recently surveyed enrollees in a Medicare supplement plan offering selected CAM benefits and found that the most frequently cited reason for using CAM therapies was “general health improvement” (42%), whereas “chronic medical problems” was cited by only 18% of respondents as the reason for CAM use. Whether use of CAM providers for wellness and preventive care is because of patient frustration with deficiencies of the conventional system is unclear.25,26 In the case of chiropractic therapy, maintenance care has been correlated with more frequent visits. Maintenance care is a term used by chiropractors to describe regular visits made for such purposes as optimizing health and minimizing recurrences or exacerbations of conditions. It may consist of manipulative procedures and counseling regarding exercise, stretching, and diet.27 As many as 80% of chiropractic patients will have maintenance care recommended to them, accounting for up to 23% of chiropractors’ practice income.28

High-frequency use of conventional providers was associated with use of a CAM provider among those using a CAM therapy. Similarly, a recent study by Druss and Rosenheck23 found that those in the highest quartile of physician visits were more than twice as likely to have visited a CAM provider in the last year. However, these investigators did not present data on frequency of visits to CAM providers. We did not find the presence of a psychiatric disorder to be associated with use or frequent use of CAM providers. This stands in contrast to studies of conventional medicine, which show a strong correlation between psychiatric diagnoses and more frequent medical care use.5,10,11 Although our results may have been due to self-reporting bias or inadequate statistical power, our results do not support the notion that presence of a psychiatric disorder is an important correlate of CAM provider use.

### Table 2. Factors Independently Associated With High-Frequency Use of a Complementary and Alternative Medicine (CAM) Provider

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>All Therapies Combined*</th>
<th>Manipulative Therapists†</th>
<th>Nonmanipulative Therapists†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full insurance coverage of CAM provider</td>
<td>5.06 (2.45-10.47)</td>
<td>8.27 (3.19-21.59)</td>
<td>2.44 (0.95-6.29)</td>
</tr>
<tr>
<td>Partial insurance coverage of CAM provider</td>
<td>3.26 (1.72-6.19)</td>
<td>4.68 (2.07-10.59)</td>
<td>1.58 (0.69-3.63)</td>
</tr>
<tr>
<td>Used CAM therapy for wellness</td>
<td>2.85 (1.63-4.98)</td>
<td>2.50 (1.23-5.06)</td>
<td>2.49 (1.27-4.89)</td>
</tr>
<tr>
<td>Used CAM therapy for back or neck problems</td>
<td>2.26 (1.29-3.94)</td>
<td>1.81 (0.91-3.62)</td>
<td>1.96 (0.87-4.38)</td>
</tr>
</tbody>
</table>

*Adjusted for household income, household size, and provider type for providers used by more than 3% of respondents (chiropractic, diet programs, relaxation techniques, massage, self-help groups, herbal therapies).
†Analysis restricted to visits to chiropractic and massage providers only. Adjusted for type of provider seen, household income, and household size.
‡Analysis excluded visits for chiropractic and massage. Adjusted for household income, household size, and provider type for providers used by more than 3% of respondents (herbal therapies, diet programs, relaxation techniques, self-help groups).
Our analysis has several limitations. First, our visit data were based on self-report, and our results are subject to recall bias. However, recall tends to underestimate the actual number of visits made as the number of visits increases. Therefore, this bias may lead to an underestimation of the contribution to visits made by high-frequency users of CAM services. Second, sample size restrictions required us to combine CAM modalities when determining factors correlated with use of CAM providers and frequent CAM provider use. Our grouping was supported by our observation that the most frequently used CAM modalities had similar percentages of high-frequency users and by our adjustment for type of therapy for commonly used modalities. However, for the less frequently used modalities, different patterns of use might have been due to small sample subsets or true differences in visit frequency to different types of providers. Third, because our sample size was limited for some analyses, we may not have had sufficient power to detect small-to-moderate differences among various groups. For example, our lack of finding a significant relationship between full or partial insurance coverage and frequent use of nonmanipulative CAM providers (Table 2) may have been due to inadequate power. Finally, estimation procedures used to calculate the number of different providers seen and the total number of visits made to CAM providers resulted in slight discrepancies in our calculations and may have introduced some bias into our results. However, because estimation was required for only 2% of CAM users, any discrepancies or bias introduced was small and do not affect our conclusions. Our analyses suggest that if the estimation procedures biased results, it was in the direction of underestimation of the total number of visits made to CAM providers and underestimation of the proportion of visits made by respondents using 4 or more CAM modalities. Examples describing how calculation discrepancy and bias may have been introduced are described in the box on this page.

In summary, we found that 8.9% of the overall population accounted for more than 75% of the 629 million visits estimated to have been made to CAM providers in 1997. Factors associated with high-frequency use of CAM providers were full and partial insurance coverage of the CAM provider and using the CAM therapy for wellness or for back or neck problems, whereas the presence of chronic medical conditions was associated with any use of CAM providers. Needs for wellness and preventive care are emerging as factors of prime importance to CAM users. Research is needed to determine whether patient perceptions of appropriate wellness and preventive care are based on unrealistic expectations of health care in general or CAM therapies specifically or if they reflect worthy and realistic goals. Our finding that full or partial insurance coverage is strongly associated with high-frequency use of CAM providers has implications for use of CAM providers in the future, given current trends of increasing insurance coverage of CAM providers. Future research must focus on clinical outcomes and cost-effectiveness of preventive and interventional treatments provided by CAM providers. Until better data are available, insurbers should proceed cautiously when considering extending CAM benefits.

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Calculation Discrepancy and Bias
For example, a respondent who was estimated to have seen 0.35 providers would have been described as having seen 0 CAM providers, but would have been counted as contributing 0.35 × N visits to CAM providers, where N is the mean number of visits to the type of provider the respondent might have seen. Bias may have been introduced as indicated by the following factors: respondents visiting chiropractors who used 4 or more CAM modalities made an average of 12.2 visits to chiropractors, whereas those visiting chiropractors who used 2 or fewer CAM modalities made an average of 7.7 visits to chiropractors (data not shown).

REFERENCES


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