Trends in Alternative Medicine Use in the United States, 1990-1997

Results of a Follow-up National Survey

David M. Eisenberg, MD; Roger B. Davis, ScD; Susan L. Ettner, PhD; Scott Appel, MS; Sonja Wilkey; Maria Van Rompay; Ronald C. Kessler, PhD

Context.—A prior national survey documented the high prevalence and costs of alternative medicine use in the United States in 1990.

Objective.—To document trends in alternative medicine use in the United States between 1990 and 1997.

Design.—Nationally representative random household telephone surveys using comparable key questions were conducted in 1991 and 1997 measuring utilization in 1990 and 1997, respectively.

Participants.—A total of 1539 adults in 1991 and 2055 in 1997.

Main Outcomes Measures.—Prevalence, estimated costs, and disclosure of alternative therapies to physicians.

Results.—Use of at least 1 of 16 alternative therapies during the previous year increased from 33.8% in 1990 to 42.1% in 1997 ($P \leq .001$). The therapies increasing the most included herbal medicine, massage, megavitamins, self-help groups, folk remedies, energy healing, and homeopathy. The probability of users visiting an alternative medicine practitioner increased from 36.3% to 46.3% ($P = .002$). In both surveys alternative therapies were used most frequently for chronic conditions, including back problems, anxiety, depression, and headaches. There was no significant change in disclosure rates between the 2 survey years; 39.8% of alternative therapies were disclosed to physicians in 1990 vs 38.5% in 1997. The percentage of users paying entirely out-of-pocket for services provided by alternative medicine practitioners did not change significantly between 1990 (64.0%) and 1997 (58.3%) ($P = .36$). Extrapolations to the US population suggest a 47.3% increase in total visits to alternative medicine practitioners, from 427 million in 1990 to 629 million in 1997, thereby exceeding total visits to all US primary care physicians. An estimated 15 million adults in 1997 took prescription medications concurrently with herbal remedies and/or high-dose vitamins (18.4% of all prescription users). Estimated expenditures for alternative medicine professional services increased 45.2% between 1990 and 1997 and were conservatively estimated at $21.2 billion in 1997, with at least $12.2 billion paid out-of-pocket. This exceeds the 1997 out-of-pocket expenditures for all US hospitalizations. Total 1997 out-of-pocket expenditures relating to alternative therapies were conservatively estimated at $27.0 billion, which is comparable with the projected 1997 out-of-pocket expenditures for all US physician services.

Conclusions.—Alternative medicine use and expenditures increased substantially between 1990 and 1997, attributable primarily to an increase in the proportion of the population seeking alternative therapies, rather than increased visits per patient.

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From the Center for Alternative Medicine Research and Education, Department of Medicine, Beth Israel Deaconess Medical Center (Drs Eisenberg and Davis, Mr Appel, and Mss Wilkey and Van Rompay), and the Department of Health Care Policy, Harvard Medical School (Drs Ettner and Kessler), Boston, Mass.

Reprints: David M. Eisenberg, MD, Center for Alternative Medicine Research and Education, Beth Israel Deaconess Medical Center, 330 Brookline Ave, Boston, MA 02215.

ALTERNATIVE medical therapies, functionally defined as interventions neither taught widely in medical schools nor generally available in US hospitals,[1] have attracted increased national attention from the media, the medical community, governmental agencies, and the public. A 1990 national survey of alternative medicine prevalence, costs, and patterns of use[1] demonstrated that alternative medicine has a substantial presence in the US health care system. Data from a survey in 1994[2] and a public opinion poll in 1997[3] confirmed the extensive use of alternative medical therapies in the United States. An increasing number of US insurers and managed care organizations now offer alternative medicine programs and benefits.[4] The majority of US medical schools now offer courses on alternative medicine.[5]

National surveys performed outside the United States suggest that alternative medicine is popular throughout the industrialized world.[6] The percentage of the population who used alternative therapies during the prior 12 months has been estimated to be 10% in Denmark (1987),[7] 33% in Finland (1982),[8] and 49% in Australia (1993).[9] Public opinion polls and consumers' association surveys suggest high prevalence rates throughout Europe and the United Kingdom.[10-13] The percentage of the Canadian population who saw an alternative therapy practitioner during the previous 12 months has been estimated at 15% (1995).[14] The wide range of utilization rates can be explained, in part, by the disparity in definitions of alternative therapy and the selection of therapies assessed.

The presumption is that alternative medicine use in the United States has increased at a considerable pace in recent years. The purpose of this follow-up national survey was to investigate this presumption and document trends in alternative medicine prevalence, costs, disclosure of use to physicians, and correlates of use since 1990.

METHODS

Sample

We conducted parallel nationally representative telephone surveys in 1991 and 1997. Survey methods were approved by the Beth Israel Deaconess Institutional Review Board, Boston, Mass.

Both surveys used random-digit dialing to select households and random selection of 1 household resident, aged 18 years or older, as the respondent. Eligibility was limited to English speakers in whom cognitive or physical impairment did not prevent completion of the interview. We asked respondents about their use of alternative therapies during the prior 12 months. We consider the results of the 1991 survey, fielded between January and March of that year, representative of 1990, and the results of the 1997 survey, fielded between November 1997 and February 1998, representative of 1997.

The sampling scheme was designed with a target sample of 1500 in 1990 and 2000 in 1997. The latter sample size was chosen to provide power in excess of 80% to detect an increase from 34% to 39% in the proportion of adults who used at least 1 form of alternative therapy during the prior 12 months. The actual numbers of completed interviews were 1539 in 1990 (67% response rate) and 2055 in 1997 (60% weighted response rate). A secular trend in lower survey response required us to offer a $20 financial incentive for participation in the 1997 survey to maintain a response rate near the one achieved in 1990. No financial incentive was used in the 1990 survey.

The data in each survey were separately weighted to adjust for geographic variation in cooperation (eg, by region of country and urbanicity) and for household variation in probability of selection (ie, the inverse relationship between size of household and probability of selection because only 1 interview was completed in each sample household). The data were then weighted in parallel on sociodemographic variables to adjust for aggregate discrepancies between the sample distributions and population distributions provided by the US Census Bureau. This last stage of weighting was based on the 1997 Current Population Survey data[15] and was done in parallel across the 2 surveys to remove any between-survey discrepancies of weighted sociodemographic distributions.

Of the initial sample of 9750 telephone numbers in 1997, 26% were nonworking, 17% were not assigned to households, and 9% were unavailable (ie, despite 6 attempted follow-up contacts). We declared 481 households ineligible because respondents did not speak English or because of cognitive or physical incapacity. Among the remaining 4167 eligible respondents, 1720 (41.3%) completed the interview on initial request. Attempts were then made to convert a random subsample of 1066 refusers by offering them an increased stipend ($50). A total of 335 (31.4%) of the 1066 contacted were converted in this manner. Extrapolating this conversion rate to all of the refusers and weighting the data for the undersampling of initial refusers, we obtained a 60% $(41.3\% + [31.4\% \times (100\% - 41.3\%)])$ weighted overall response rate among eligible respondents.

Interview

In both years, the interview was presented as a survey conducted about the health care practices of Americans by investigators from Harvard Medical School. No mention was made of alternative or complementary therapies. The substantive questions began by asking about perceived health, health worries, days spent in bed, and functional impairment due to health problems. We then asked respondents about their interactions with a *medical doctor*, defined as "a medical doctor (MD) or a doctor of osteopathic medicine (DO), not a chiropractor or other nonmedical doctor." The term *medical doctor* was used throughout the remainder of the interview.

To document trends we explored the following: (1) Respondents in both surveys were presented with a list of common medical conditions and asked if they had experienced each of these conditions during the previous 12 months. (2) Respondents who reported more than 3 conditions were asked to identify their 3 most bothersome or serious medical conditions and were then asked about seeing a medical doctor for these principal medical conditions and about the perceived quality of these interactions. (3) Respondents were asked about their lifetime and past 12-month use of 16 alternative therapies and whether each of these therapies was used for each of the principal medical conditions. The 1997 survey also asked about use for a representative sample of other medical conditions and expanded the list of therapies beyond the original 16 assessed in 1990. (4) We distinguished between use under the supervision of a practitioner of alternative therapy and use without such supervision. Respondents who reported supervised use were asked about their number of visits in the past 12 months to practitioners of each therapy. (5) All users of alternative therapies in 1997 who acknowledged seeing a medical doctor during the past year were then asked if they had discussed their use of each therapy with a medical doctor and, if not, why not.

Prior use of 16 targeted therapies was explored using a computer-assisted interview transcript, which included the following clarifications in both 1990 and 1997: When asking about high-dose vitamin or megavitamin therapies, interviewers made clear that the survey sought information on vitamins not including a daily vitamin or vitamin prescribed by a doctor. Prayer or spiritual healing by others was asked about separately from prayer or spiritual practice for individual health concern. Commercial diet programs were described as "the kind you have to pay for, but not including trying to lose or gain weight on your own." A lifestyle diet included examples like vegetarianism or macrobiotics. Questions regarding energy healing included examples of magnets, energy-emitting machines, or the "laying on of hands," and use of relaxation techniques was explained using the examples of meditation or the relaxation response. The remaining 9 therapies were asked about without interviewer clarification.

The 1997 survey was longer (average, 30 minutes) than the 1990 survey (average, 25 minutes) because we sought to explore a number of areas in more depth. All the important questions in the 1990 survey were repeated in 1997. These replicated questions are the focus of the current report. One major change in the 1997 survey involved replicated questions: respondents who reported using more than 3 alternative therapies were asked in-depth questions (eg, use of a practitioner of alternative therapies, number of visits, out-of-pocket expenses, reasons for use) for all such therapies in 1990 but only for a random sample of 3 such therapies in 1997. This was required because of expansion in both the number of alternative therapies we assessed in 1997 and questions about each therapy. The 1997 data were weighted to adjust for this sampling in making comparisons with the 1990 data.

Insurance Coverage

For each therapy for which respondents said they used services of an alternative medicine practitioner, we asked whether insurance helped pay for any of the costs of the therapy and whether the respondent paid any of the costs out-of-pocket. Based on the answers to these questions, we calculated the proportion of users of each therapy who had complete, partial, or no insurance coverage for that therapy. We also calculated the overall frequency of insurance coverage by weighting the insurance frequencies within each therapy by the proportion of all user therapies accounted for by that therapy.

Construction of Cost Measures

The total cost of visits to alternative medicine practitioners was calculated by multiplying the number of visits for each therapy by a per-visit price and adding the prices of the following therapies: relaxation techniques, herbal medicine, massage therapy, chiropractic care, megavitamins, self-help groups, imagery techniques, commercial diet, folk rem-

edies, lifestyle diet, energy healing, homeopathy, hypnosis, biofeedback, and acupuncture. Out-of-pocket costs were constructed for each therapy by multiplying each user's visits by the full price of the visit if the user had no insurance coverage, by 0.2 if the user had partial insurance coverage, and by zero if insurance paid the full price of the visit. The assumption of a 20% coinsurance rate among users with partial insurance coverage should yield a conservative estimate of out-of-pocket costs, because it ignores deductibles and benefit caps and assumes that insurance benefits for alternative therapy are similar to medical coverage.

We calculated costs based on per-visit prices chosen from typical prices paid for such services by private insurers using a Resource-Based Relative Value Scale (RBRVS)[16] system in selected states. We then recalculated costs using a second set of prices chosen partly to reflect empirical data on the out-of-pocket costs paid by the respondents, but primarily to represent conservative estimates of the per-visit cost of alternative therapies. Total costs based on this second set of prices should represent a lower bound on true expenditures.

Out-of-pocket costs of herbs, megavitamin supplements, and commercial diet products were calculated by multiplying the total population of users by the average out-of-pocket expenditures reported by respondents who used each of these products. In 1997, each respondent who used an alternative therapy was also asked, "Did you spend any additional money on things like books, classes, equipment, or any other items related to [the alternative therapy] in the past 12 months?" Out-of-pocket expenditures on these other items were calculated following the same procedures used for herbs, megavitamins, and commercial diet products. Out-of-pocket expenditures on herbs, megavitamins, commercial diet products, and related items were based on actual dollar amounts reported, so changes between 1990 and 1997 include inflation. To isolate the increase in the cost of practitioner visits between 1990 and 1997 solely because of the increase in the use of alternative therapies, we calculated 1990 practitioner costs using 1997 prices. The differences between the 1990 and 1997 costs of practitioner services reported are understated because they do not take into account inflation, estimated at 44% by the medical component of the Consumer Price Index.[17]

Statistical Analysis

Analyses reported herein consist of computation of prevalence and mean estimates and comparisons of these estimates through the years. As the data in both surveys are weighted, the Taylor series method was used to compute significance tests using SUDAAN software.[18] χ^2 Tests of independence were used for comparing proportions, while t tests were used for continuous measures. Extrapolations of survey estimates to the total population were based on the assumption that there were 180 million adults living in the US household population in 1990 and 198 million in 1997.[15]

RESULTS

Characteristics of Respondents

The characteristics of the subjects we interviewed are shown in Table 1. The sociodemographic characteristics of the survey sample are similar to the population distributions published by the US Bureau of the Census.[15]

Patterns of Use

Use of alternative therapies in 1997 was not confined to any narrow segment of society. Rates of use ranged from 32% to 54% in the wide range of sociodemographic groups examined. Use was more common among women (48.9%) than men (37.8%) ($P = .001$) and less common among African Americans (33.1%) than members of other racial groups (44.5%) ($P = .004$). People aged 35 to 49 years reported higher rates of use (50.1%) than people either older (39.1%) ($P = .001$) or younger (41.8%) ($P = .003$). Use was higher among those who had some college education (50.6%) than with no college education (36.4%) ($P = .001$) and more common among people with annual incomes above $50 000 (48.1%) than with lower incomes (42.6%) ($P = .03$). Use was more common among those in the West (50.1%) than elsewhere in the United States (42.1%) ($P = .004$). With the exception of observed sex differences in 1997, these patterns are consistent with those identified in 1990.

Population prevalence estimates of alternative medicine use in 1990 and 1997 are shown in Table 2. The 1990 survey estimated that 33.8% of the US adult population (60 million people) used at least 1 of the 16 alternative therapies listed, while the 1997 survey estimated that this proportion increased significantly to 42.1% (83 million people). A comparison of specific therapies in the first column shows increases in 15 of the 16 therapies; 10 of these were statistically significant ($P \leq .05$). The largest increases were in the use of herbal medicine, massage, megavitamins, self-help groups, folk remedies, energy healing, and homeopathy. Summing Table 2 (first column) data shows a 65% increase in total number of therapies used, from 577 therapies per 1000 population in 1990 to 953 per 1000 in 1997.

Table 1.—Characteristics of the 1997 (N = 2055) and 1990 (N = 1539) Subjects Interviewed Compared With the US Population*

Characteristic	1997 Survey, %	1997 US Bureau of the Census,[17] %	1990 Survey, %
Sex			
Female	52	52	48
Male	48	48	52
Age, y			
18-24	10	13	16
25-34	22	20	23
35-49	33	32	27
≥50	35	35	34
Race/ethnicity			
White	77	73	82
African American	8	12	9
Hispanic	10	11	6
Asian	1	4	1
Other	4	1	2
Education			
<High school	14	18	24
High school graduate	37	34	35
College or more	49	48	40
Annual income, $			
<20 000	27	33	30
20 000-49 999	45	41	53
≥50 000	27	26	18
Region			
Northeast	21	19	22
North central	24	24	32
South	35	35	26
West	20	22	19

*Due to rounding, percentages do not always total 100.

Several categories of alternative therapy warrant clarification about the actual modalities used. Three quarters of respondents who acknowledged use of relaxation techniques said they used meditation. Among those who reported using energy healing, the most frequently cited technique involved the use of magnets. Other modalities common to this category included Therapeutic Touch, Reiki, and energy healing by religious groups. The use of self-prayer, in contrast to spiritual or energy healing performed by others, was investigated in terms of prevalence of use but not in terms of costs, referral patterns, or insurance reimbursement. All analyses in this article exclude data involving self-prayer.

Table 2 (second column) shows that a significantly higher proportion of alternative therapy users saw an alternative medicine practitioner in 1997 (46.3%, equivalent to 39 million people) than in 1990 (36.3%, equivalent to 22 million people). Of the 15 therapies for which the question was asked, the proportion of users who saw a practitioner increased for 11. However, even in 1997 there were only 5 therapies in which a majority of users consulted a practi-

Table 2.—Comparison of Prevalence and Frequency of Use of Alternative Therapies Among Adult Respondents, 1997 vs 1990*

Type of Therapy	Used in Past 12 mo, %		Saw a Practitioner in Past 12 mo, %		Mean No. of Visits per User in Past 12 mo		No. of Visits per 1000 Population		Estimated Total No. of Visits in 1997 (in Thousands)†	Total Visits, %‡§
	1997	1990	1997	1990	1997	1990	1997	1990		
Relaxation techniques	16.3¶	13.1	15.3	9.0	20.9	18.6	521.2	219.3	103 203	16.4
Herbal medicine	12.1**	2.5	15.1	10.2	2.9	8.1	53.0	20.7	10 491	1.7
Massage	11.1**	6.9	61.6#	41.4	8.4	14.8	574.4	422.8	113 723	18.1
Chiropractic	11.0	10.1	89.9**	71.1	9.8	12.6	969.1¶	904.8	191 886	30.5
Spiritual healing by others‖	7.0#	4.2	. . .	9.2	. . .	14.2	. . .	54.9	. . .	. . .
Megavitamins	5.5**	2.4	23.7	11.8	8.6	12.6	112.1	35.7	22 196	3.5
Self-help group	4.8**	2.3	44.4	38.3	18.9	20.5	402.8	180.6	79 754	12.7
Imagery	4.5	4.2	23.1	15.1	11.0	14.2	114.3	90.1	22 640	3.6
Commercial diet	4.4	3.9	43.2	24.0	7.3	20.7	138.8	193.8	27 474	4.4
Folk remedies	4.2**	0.2	6.2	0.0	1.0	. . .	2.6	. . .	516	0.1
Lifestyle diet	4.0	3.6	8.0	12.5	2.8	8.1	9.0	36.5	1774	0.3
Energy healing	3.8**	1.3	26.3	32.2	20.2#	8.3	201.9¶	34.7	39 972	6.4
Homeopathy	3.4**	0.7	16.5	31.7	1.6	6.1	9.0	13.5	1777	0.3
Hypnosis	1.2	0.9	62.7	51.8	2.8	2.6	21.1	12.1	4171	0.7
Biofeedback	1.0	1.0	54.3	20.8	3.6	6.4	19.5	13.3	3871	0.6
Acupuncture	1.01¶	0.4	87.6	91.3	3.1	38.4	27.2	140.2	5377	0.9
≥1 of 16 alternative therapies	42.1**	33.8	46.3#	36.3	16.3	19.2	**3176.0**	**2373.0**	**628 825**	. . .
SE	1.2	1.4	1.9	2.5	1.8	4.5	378.7	599.7	74 997	. . .
Self-prayer‖	35.1**	25.2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

*Percentages are of those who used that type of therapy. Ellipses indicate data not applicable.
†Estimate based on 1997 population estimate of 198 million.
‡Percentage of total visits of the 16 therapies (ie, excluding self-prayer).
§Because of rounding, percentages do not total 100.
‖Respondents who received spiritual healing by others were not asked for details of visits in 1997, nor were those who used self-prayer in either year.
¶$P \leq .05$; #$P \leq .01$; **$P \leq .001$.

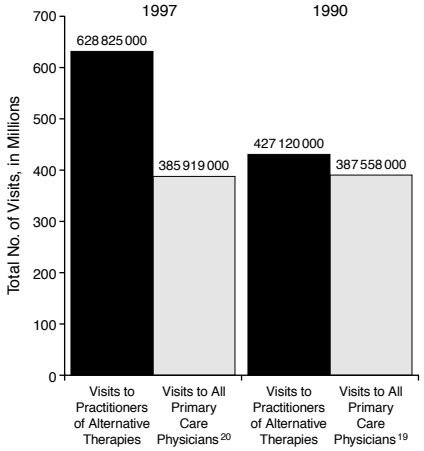

Figure 1.—Trends in annual visits to practitioners of alternative therapies vs visits to primary care physicians, United States, 1997 vs 1990. Data are from the National Ambulatory Medical Care Survey from 1996[20] and 1990.[19]

tioner: massage, chiropractic, hypnosis, biofeedback, and acupuncture. Unsupervised use (ie, a form of expanded self-care) remains the usual method of use for all other alternative therapies.

Table 2 (third column) reveals no consistent change in the average number of visits among respondents who consulted practitioners of alternative therapy between 1990 (19.2%) and 1997 (16.3%). However, because of the increase in the proportion of people using these therapies, the total number of visits increased substantially from 1990 to 1997. This 47.3% increase in total visits is largely because of increases in visits for relaxation therapy, massage, chiropractic, self-help, and energy healing. The visits to practitioners of alternative therapy in 1997 exceeded the projected number of visits to all primary care physicians in the United States by an estimated 243 million (Figure 1).[19,20] Visits to chiropractors and massage therapists accounted for nearly half of all visits to practitioners of alternative therapies.

Prevalence estimates for selected additional therapies assessed in 1997 but not 1990 include: aromatherapy (5.6%), neural therapy (1.7%), naturopathy (0.7%), and chelation therapy (0.13%) (data not shown). Comparisons of total visits and costs for 1990 and 1997 were performed without inclusion of these data. Prevalence estimates for the simultaneous use of prescription medications with herbs, with high-dose vitamins, or with both were obtained. Among the 44% of adults who said they regularly take prescription medications, nearly 1 (18.4%) in 5 reported the concurrent use of at least 1 herbal product, a high-dose vitamin, or both.

Table 3 summarizes results regarding use of alternative therapies for the most commonly reported principal medical conditions in either survey. In each year, a majority of respondents reported 1 or more principal medical conditions. The list of conditions was expanded in 1997 (37 conditions) compared with 1990 (24 conditions). Significant increases in the proportion using alternative therapies for principal condition(s) (second column) occurred for back problems, allergies, arthritis, and digestive problems. The highest condition-specific rates of alternative therapy use in 1997 were for neck (57.0%) and back (47.6%) problems. The proportion of respondents with 1 or more medical conditions who reported use of an alternative therapy for at least 1 of those conditions increased significantly from 22.9% in 1990 to 33.7% in 1997 ($P \leq .001$). The weighted condition-specific proportion who saw an alternative medicine practitioner for a given condition also increased significantly from 6.8% in 1990 to 11.4% in 1997 ($P \leq .001$).

Table 3 also summarizes the probability that individuals who saw a medical doctor for a particular condition also used an alternative therapy (fourth column) or also saw a practitioner of alternative therapy (fifth column) for that same condition during the same year. A generally increasing pattern of alternative medicine use can be seen across the range of conditions studied. In 1990, an estimated 1 (19.9%) in 5 individuals seeing a medical doctor for a principal condition also used an alternative therapy. This percentage increased to nearly 1 (31.8%) in 3 in 1997 ($P \leq .001$). The percentage who saw a medical doctor and also sought the services of an alternative practitioner increased significantly from 8.3% in 1990 to 13.7% in 1997 ($P \leq .01$). In both 1990 and 1997, chiropractic, relaxation techniques, and massage therapy were among the al-

Table 3.—Comparison of Use of Alternative Therapies for the Most Frequently Reported Principal Medical Conditions, 1997 vs 1990

Condition	Percentage Reporting Condition		Used Alternative Therapy for Condition in Past 12 mo, %		Saw Alternative Practitioner for Condition in Past 12 mo, %		Saw Medical Doctor and Used Alternative Therapy for Condition in Past 12 mo, %		Saw Medical Doctor and Alternative Practitioner for Condition in Past 12 mo, %		Therapies Most Commonly Used in 1997
	1997	1990	1997	1990	1997	1990	1997	1990	1997	1990	
Back problems	24.0#	19.9	47.6#	35.9	30.1#	19.5	58.8**	36.1	39.1#	23.0	Chiropractic, massage
Allergies	20.7#	16.0	16.6#	8.7	4.2	3.3	28.0¶	15.7	6.4	5.0	Herbal, relaxation
Fatigue*	16.7	. . .	27.0	. . .	6.3	. . .	51.6	. . .	13.1	. . .	Relaxation, massage
Arthritis	16.6	15.9	26.7¶	17.5	10.0	7.6	38.5¶	23.8	15.9	13.8	Relaxation, chiropractic
Headaches	12.9	13.2	32.2	26.5	13.3¶	6.3	42.0	31.8	20.0	12.1	Relaxation, chiropractic
Neck problems*	12.1	. . .	57.0	. . .	37.5	. . .	66.6	. . .	47.5	. . .	Chiropractic, massage
High blood pressure	10.9	11.0	11.7	11.0	0.9	2.9	11.9	11.6	1.1	3.5	Megavitamins, relaxation
Sprains or strains	10.8	13.4	23.6	22.3	10.3	9.6	29.4	24.7	15.9	13.6	Chiropractic, relaxation
Insomnia	9.3#	13.6	26.4	20.4	7.6	4.0	48.4	19.8	13.3	10.9	Relaxation, herbal
Lung problems	8.7	7.3	13.2	8.8	2.5	0.5	17.9	11.1	3.4	0.6	Relaxation, spiritual healing, herbal
Skin problems	8.6	8.0	6.7	6.0	2.2	1.6	6.8	6.9	0.0	2.5	Imagery, energy healing
Digestive problems	8.2	10.1	27.3#	13.2	9.7¶	3.6	34.1¶	15.3	10.7	5.8	Relaxation, herbal
Depression†	5.6	8.4	40.9	20.2	15.6	7.0	40.9	35.2	26.9	14.0	Relaxation, spiritual healing
Anxiety‡	5.5	9.5	42.7	27.9	11.6	6.5	42.7	45.4	21.0	10.4	Relaxation, spiritual healing
Weighted average across all conditions§	. . .	. . .	28.2**	19.1	11.4**	6.8	31.8**	19.9	13.7#	8.3	. . .
People with ≥1 condition‖	77.8¶	81.5	33.7**	22.9	15.3**	6.9	. . .	. . .	. . .	. . .	. . .

*Not included as a separate question in 1990 survey. Ellipses indicate data not applicable.
†The 1997 question asked about severe depression, which is not directly comparable with the 1990 question that asked about depression.
‡The 1997 question asked about anxiety attacks, which is not directly comparable with the 1990 question that asked about anxiety.
§The weighted averages are calculated based on all 37 conditions studied in 1997 and all 24 conditions studied in 1990, ie, condition is unit of analysis.
‖This row shows percentage of respondents who reported 1 or more principal medical conditions, along with the percentage of these respondents who reported use of therapy or practitioners for at least 1 of these conditions, ie, person is the unit of analysis.
¶$P \leq .05$; #$P \leq .01$; **$P < .001$.

ternative therapies used most commonly to treat principal medical conditions.

As in 1990, 96% of 1997 respondents who saw a practitioner of alternative therapy for a principal condition also saw a medical doctor during the prior 12 months, and only a minority of alternative therapies used were discussed with a medical doctor. Among the 618 respondents in 1997 who used 1 or more alternative therapies and had a medical doctor, only 377 (38.5%) of the 979 therapies used were discussed with the respondent's medical doctor. This is not significantly different from the 353 (39.8%) of the 886 therapies discussed by the comparable group of respondents (n = 501) in the 1990 survey. Given that most alternative therapy is used without the supervision of an alternative practitioner, a substantial portion of alternative therapy use for principal medical conditions (46.0% in 1997 and 51.3% in 1990) was done without input from either a medical doctor or practitioner of alternative therapy.

Payment for Alternative Therapy

Data on insurance coverage of expenditures for alternative therapy services are shown in Table 4. The majority of people who saw alternative therapy practitioners paid all the costs out-of-pocket in both 1990 (64.0%) and 1997 (58.3%). None of the changes in insurance coverage between 1990 and 1997 were statistically significant, probably due in part to small sample sizes.

Using conservative assumptions about the fees charged by practitioners of alternative therapies and assuming no changes in visit prices, Americans spent an estimated $14.6 billion on visits to these practitioners in 1990 and $21.2 billion in 1997 (Table 5). Using less conservative (RVRBS) price figures, the amount spent on services of practitioners of alternative therapies was estimated at $22.6 billion in 1990 and $32.7 billion in 1997. Regardless of which set of prices is used, total expenditures for practitioners of alternative therapies are estimated to have increased by approximately 45% between 1990 and 1997 exclusive of inflation.

Estimated out-of-pocket expenditures for high-dose vitamins increased from $0.9 billion in 1990 to $3.3 billion in 1997. Smaller increases were observed for commercial diet products ($1.3 billion vs $1.7 billion). Unlike the 1990 survey, the 1997 survey included questions about expenditures for herbal products ($5.1 billion) and respondents' alternative therapy–specific books, classes, or equipment ($4.7 billion).

The estimated total out-of-pocket component of the alternative medicine market in 1997 is shown in Figure 2. Projected out-of-pocket expenditures for all hospitalizations in 1997 in the United States totaled $9.1 billion, while projected out-of-pocket expenses for all US physician services in the same year were $29.3 billion.[21] This compares to a conservatively estimated $12.2 billion in out-of-pocket payments to alternative medicine practitioners for the 15 therapies studied. Adding the estimates of $5.1 billion for herbal therapies, $3.3 billion for megavitamins, $1.7 billion for diet products, and $4.7 billion on alternative therapy–specific books, classes, and equipment, the total out-of-pocket expenditures for alternative medicine are conservatively estimated to be $27.0 billion. Using the average per-visit prices derived from an RBRVS system[16] rather than our conservative estimates (Table 5), the estimated total out-of-pocket expense is approximately $34.4 billion, which is comparable with the projected 1997 out-of-pocket expenditures for all physician services.[21] These estimates exclude out-of-pocket expenditures associated with therapies unique to the 1997 survey (eg, naturopathy, aromatherapy, neural therapy, and chelation therapy).

COMMENT

The results of our study are limited by the restriction of the sampling frame to people who speak English and have telephones and by the low response rate. The decrease in overall response rate from 67% in 1990 to 60% in 1997 is consistent with secular trends for US telephone interviews in recent years.[22] It is difficult to know what, if any, bias was introduced or whether trend estimates are biased by the fact that financial incentives were used in 1997 but not 1990. Furthermore, we have no data on the accuracy of self-

Table 4.—Insurance Coverage of Alternative Medicine Services in the United States, 1997 vs 1990*

Type of Therapy	Percentage of Users of Services					
	Coverage, 1997			Coverage, 1990		
	Complete	Partial	None	Complete	Partial	None
Relaxation techniques	28.8	6.6	64.7	5.3	25.9	68.7
Herbal medicine	8.6	11.2	80.2	30.7	15.5	53.8
Massage	11.8	16.7	71.5	19.1	18.3	62.6
Chiropractic	17.6	38.1	44.3	11.5	32.8	55.9
Spiritual healing by others†	. . .	. . .	. . .	0.0	0.0	100.0
Megavitamins	2.7	53.3	44.0	0.0	100.0	0.0
Self-help group	11.7	36.9	51.5	2.8	17.4	79.8
Imagery	51.5	3.5	45.0	16.1	0.0	83.9
Commercial diet	5.0	40.1	54.9	0.0	5.1	94.9
Folk remedies	0.0	0.0	100.0	. . .	. . .	. . .
Lifestyle diet	0.0	44.9	55.1	62.3	0.0	37.7
Energy healing	30.8	8.2	61.1	0.0	19.1	80.9
Homeopathy	0.0	0.0	100.0	0.0	24.7	75.3
Hypnosis	5.1	0.0	94.9	7.0	0.0	93.0
Biofeedback	30.5	43.7	26.0	14.1	19.9	66.0
Acupuncture	0.0	40.7	59.3	21.6	23.0	55.4
Weighted average across all therapies	15.3	26.4	58.3	12.3	23.7	64.0

*Data are percentage of users of alternative therapies provided by practitioners. Ellipses indicate data not applicable.
†Reimbursement patterns not explored in 1997.

Table 5.—National Projections of Expenditures for Alternative Therapies in the United States, 1997 vs 1990*

Category of Expenditure	1997 (Billions of Dollars)		1990 (Billions of Dollars)		Change (%), 1997 vs 1990 (Billions of Dollars)	
	Conservative (SE)	RBRVS (SE)	Conservative (SE)	RBRVS (SE)	Conservative	RBRVS
Total expenditures on professional services for 15 alternative therapies†	21.2 (2.4)	32.7 (3.8)	14.6 (4.0)	22.6 (6.1)	6.6 (45.2)	10.1 (44.7)
Out-of-pocket expenditures						
Professional services, 15 therapies†‡	12.2 (1.7)	19.6 (3.3)	7.2 (1.3)	11.0 (2.1)	5.0 (69.4)§	8.6 (78.2)§
Megavitamins	3.3 (0.4)		0.9 (0.3)		2.4 (266.7)‖	
Commercial diet products	1.7 (0.3)		1.3 (0.3)		0.4 (30.8)	
Subtotal of out-of-pocket expenditures assessed in 1997 and 1990†	17.2	24.6	9.4	13.2	7.8 (83.0)	11.4 (86.4)
Out-of-pocket expenditures assessed only in 1997						
Herbal medicine	5.1 (0.5)		. . .		. . .	
Therapy-specific books, classes, and equipment	4.7 (0.8)		. . .		. . .	
Total out-of-pocket expenditures for alternative therapies in 1997†	27.0	34.4	. . .	. . .	. . .	. . .

*The 1990 and 1997 cost measures are based on 1990 and 1997 population estimates, respectively (180 million vs 198 million). Both used 1997 per-visit price estimates as follows (conservative price estimate is followed by Resource-Based Relative Value Scale [RBRVS] estimate for each therapy): relaxation techniques ($20, $50), herbal medicine ($40, $60), massage therapy ($40, $60), chiropractic care ($40, $65), megavitamins ($40, $50), self-help groups ($20, $20), imagery techniques ($45, $50), commercial diet ($20, $20), folk remedies ($20, $50), lifestyle diet ($20, $60), energy healing ($40, $50), homeopathy ($45, $60), hypnosis ($60, $80), biofeedback ($60, $80), and acupuncture ($40, $60). (Price estimates for spiritual healing by others were not included because respondents reporting use were not asked for details of professional visits). Ellipses indicate data not applicable.
†These figures reflect the range in out-of-pocket expenditures for conservative vs RBRVS-derived visit prices.
‡Assumes a 20% copayment for users with partial insurance coverage.
§$P \leq .05$.; ‖$P \leq .001$.

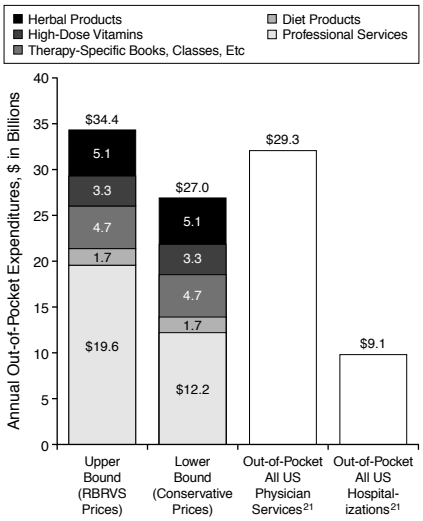

Figure 2.—Estimated annual out-of-pocket expenditures for alternative therapies vs conventional medical services, United States, 1997. Data are from the Health Care Financing Administration, United States.[21] RBRVS indicates Resource-Based Relative Value Scale.

reports concerning recollections of number of visits and amounts spent on books, classes, relevant equipment, herbs, or supplements. To the extent possible, we adjusted by weighting data on sociodemographic variables associated with alternative therapy use (eg, income, education, age, region). It is conceivable that the estimated prevalence and costs of alternative therapy use would have been lower if it were possible to correct for those limitations.

Within the context of these limitations, the results of these 2 surveys suggest that the prevalence and expenditures associated with alternative medical therapies in the United States have increased substantially from 1990 to 1997. This increase appears to be primarily due to increases in the prevalence of use and in the frequency with which users of alternative therapy sought professional services. In 1997, an estimated 4 in 10 Americans used at least 1 alternative therapy as compared with 3 in 10 in 1990. For adults aged 35 to 49 years in 1997, it is estimated that 1 of every 2 persons used at least 1 alternative therapy. Overall prevalence of use increased by 25%, total visits by an estimated 47%, and expenditures on services provided by practitioners of alternative therapies by an estimated 45% exclusive of inflation. Moreover, the use of alternative therapies is distributed widely across all sociodemographic groups.

It is possible to arrange the 16 principal therapies common to the 1990 and 1997 surveys along a spectrum that varies from "more alternative" to "less alternative" in relationship to existing medical school curricula, clinical training, and practice. Arguably, therapies such as biofeedback, hypnosis, guided imagery, relaxation techniques that involve elicitation of the relaxation response (<1% of the sample), lifestyle diet, and (possibly) vitamin therapy can be considered as representative of the more conventional (ie, less alternative) side of the spectrum. Visits associated with these 6 categories accounted for less than 10% of total visits to alternative medicine practitioners; the remainder were associated with the more alternative therapies.

In light of the observed 380% increase in the use of herbal remedies and the 130% increase in high-dose vitamin use, it is not surprising to find that nearly 1 in 5 individuals taking prescription medications also was taking herbs, high-dose vitamin supplements, or both. Extrapolations to the total US population suggest that an estimated 15 million adults are at risk for potential adverse interac-

tions involving prescription medications and herbs or high-dose vitamin supplements. This figure includes nearly 3 million adults aged 65 years or older. Adverse interactions of this nature, including alterations of drug bioavailability or efficacy, are known to occur[23-27] and are more likely among individuals with chronic medical illness, especially those with liver or kidney abnormalities. No adequate mechanism currently is in place to collect relevant surveillance data to document the extent to which the potential for drug-herb and drug-vitamin interaction is real or imaginary.

The magnitude of the demand for alternative therapy is noteworthy, in light of the relatively low rates of insurance coverage for these services. Unlike hospitalizations and physician services, alternative therapies are only infrequently included in insurance benefits. Even when alternative therapies are covered, they tend to have high deductibles and co-payments and tend to be subject to stringent limits on the number of visits or total dollar coverage. Because the demand for health care (and presumably alternative therapies) is sensitive to how much patients must pay out-of-pocket,[28] current use is likely to underrepresent utilization patterns if insurance coverage for alternative therapies increases in the future.

In 1990, a full third of respondents who used alternative therapy did not use it for any principal medical condition.[1] From these data, we inferred that a substantial amount of alternative therapy was used for health promotion or disease prevention. In 1997, 42% of all alternative therapies used were exclusively attributed to treatment of existing illness, whereas 58% were used, at least in part, to "prevent future illness from occurring or to maintain health and vitality."

Despite the dramatic increases in use and expenditures associated with alternative medical care, the extent to which patients disclose their use of alternative therapies to their physicians remains low. Less than 40% of the alternative therapies used were disclosed to a physician in both 1990 and 1997. It would be overly simplistic to blame either the patient or their physician for this inadequacy in patient-physician communication. The current status quo, which can be described as "don't ask and don't tell," needs to be abandoned.[29] Professional strategies for responsible dialogue in this area need to be further developed and refined.

Data from this survey, reflective of the US population, are representative of a predominantly white population. Even if we were to combine data sets from the 1990 and 1997 surveys, we would not have a sufficiently large database to provide precise estimates of the patterns of alternative therapy use among African Americans, Hispanic Americans, Asian Americans, or other minority groups. Parallel surveys, modified to include therapies unique to minority populations and translated when appropriate, should be conducted using necessary sampling strategies. Only then can we compare patterns across ethnic groups and prioritize research agendas for individual populations. As alternative medicine is introduced by third-party payers as an attractive insurance product, it would be unfair for individuals without health insurance and those with less expendable income to be excluded from useful alternative medical services or consultation (eg, professional advice on use or avoidance of alternative therapies).

In conclusion, our survey confirms that alternative medicine use and expenditures have increased dramatically from 1990 to 1997. In light of these observations, we suggest that federal agencies, private corporations, foundations, and academic institutions adopt a more proactive posture concerning the implementation of clinical and basic science research, the development of relevant educational curricula, credentialing and referral guidelines, improved quality control of dietary supplements, and the establishment of postmarket surveillance of drug-herb (and drug-supplement) interactions.

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