

Original Article

Physicians' Attitudes Toward Complementary and Alternative Medicine and Their Knowledge of Specific Therapies: A Survey at an Academic Medical Center

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The purpose of this study was to evaluate the attitudes of physicians at an academic medical center toward complementary and alternative medicine (CAM) therapies and the physicians' knowledge base regarding common CAM therapies. A link to a Web-based survey was e-mailed to 660 internists at Mayo Clinic in Rochester, MN, USA. Physicians were asked about their attitudes toward CAM in general and their knowledge regarding specific CAM therapies. The level of evidence a physician would require before incorporating such therapies into clinical care was also assessed. Of the 233 physicians responding to the survey, 76% had never referred a patient to a CAM practitioner. However, 44% stated that they would refer a patient if a CAM practitioner were available at their institution. Fifty-seven percent of physicians thought that incorporating CAM therapies would have a positive effect on patient satisfaction, and 48% believed that offering CAM would attract more patients. Most physicians agreed that some CAM therapies hold promise for the treatment of symptoms or diseases, but most of them were not comfortable in counseling their patients about most CAM treatments. Prospective, randomized controlled trials were considered the level of evidence required for most physicians to consider incorporating a CAM therapy into their practice. The results of this survey provide insight into the attitudes of physicians toward CAM at an academic medical center. This study highlights the need for educational interventions and the importance of providing physicians ready access to evidence-based information regarding CAM.

Keywords: integrative medicine – physician attitudes – physician education

Introduction

Complementary and alternative medicine (CAM) is defined by the National Center for Complementary and Alternative Medicine as 'a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine' (1). Despite uncertainties about the effectiveness of most CAM therapies, the use of CAM by patients has been well documented, with most studies suggesting that 30–98% of patients use some

form of CAM therapy (2–5). With this documented interest in CAM by patients, it is not surprising that several national and international studies have surveyed physicians' practices and beliefs with regard to CAM (6). These studies showed considerable variation in responses regarding practice of, referrals for, and belief in the efficacy of specific types of CAM (6). Possible explanations cited for the variations between these surveys include (6) (i) differences in demographic characteristics of the sample (greater acceptance of CAM in some European countries); (ii) wording of surveys (including how various CAM therapies were defined); (iii) differences in the ratio of general practitioners to specialists (7); and (iv) local or regional differences in the familiarity or availability of particular types of CAM.

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Considering the variable survey results regarding physicians' practice, referrals and knowledge about CAM, it appears prudent that leaders of CAM programs be familiar with the basic characteristics of the physicians in their institution, specifically with regard to the following questions: (i) What are the physicians' attitudes toward CAM? (ii) What is the knowledge base in the practice (i.e. do the clinicians have enough baseline knowledge to counsel patients regarding efficacy, safety and other aspects of CAM)? and (iii) What evidence is needed before a CAM therapy would be considered for inclusion into usual care? As part of the development of our institution's CAM program (8) we evaluated physicians' attitudes and knowledge base regarding common CAM therapies.

Methods

Physician Survey

This study was approved by the Mayo Foundation Institutional Review Board. A link to an anonymous, Web-based survey was e-mailed to 660 practicing staff internists in the Department of Medicine (general internists and subspecialists in cardiology, gastroenterology, pulmonology, endocrinology, nephrology, hematology, allergy, rheumatology, infectious diseases, hypertension, preventive and occupational care medicine, and critical care) at Mayo Clinic in Rochester, MN, USA, in January 2004. One e-mail reminder was sent at 2 weeks. The survey consisted of 53 questions, posed in a closed manner, addressing three areas of CAM therapy: (i) utilization and outcomes (7 questions); (ii) familiarity and experience (27 questions); and (iii) attitudes toward CAM (19 questions). Questions were derived from several sources and from the authors' experience within the institution. In particular, two previously developed surveys were supplied to the investigative team (9) and permission to use them was provided by John Kimball-Weeks (Integration Strategies for Natural Healthcare, Seattle, WA, USA).

Statistical Analysis

For each survey question, the response percentages from the total number of respondents are displayed, along with the 95% Exact Binomial Confidence Interval (CI) of the percentage. The comparison of percentages between the two groups was analyzed with the Pearson's χ^2 -test or the Mantel-Haenszel test. A *P*-value <0.05 was considered significant.

Results

Physician Demographics

Of 660 physicians who were invited by e-mail to participate in the Web-based survey, 233 (35%; 95% CI 32–39%) responded. Of the respondents, 76% (95% CI 70–82%) were men, 21% (95% CI 16–27%) were women and

3% (95% CI 1–6%) did not disclose their sex. Age distribution, subspecialty fields, time dedicated to clinical care and years in practice of the responding physicians are given in Table 1. The median number of years in practice was 16 (range 0–44). The distributions of age, sex and work location among the physicians who responded were compared with those of all physicians who received the survey (*n* = 660). The respondents were a good representation of the entire population, and no statistically significant differences were found between the two groups by the Pearson's χ^2 -test.

Table 1. Demographics of physician respondents

Category	Percentage of physicians
Age (years)	
25–35	9
36–45	35
46–55	38
≥56	17
NR	1
Specialty	
General internal medicine	25
Cardiovascular diseases	19
Gastroenterology and hepatology	10
Pulmonary and critical care medicine	8
Endocrinology	7
Preventive and occupational medicine	5
Nephrology	4
Hematology	4
Infectious diseases	3
Allergy	2
Hypertension	2
Rheumatology	2
Other	4
NR	5
Time dedicated to patient care (%)	
0–25	9
26–50	15
51–80	28
81–100	46
NR	2
Years in practice	
1–5	10
6–10	13
11–15	15
16–20	15
21–25	14
26–30	7
31+	7
NR	19

NR, no response.

Utilization and Outcomes

Physicians' responses to questions regarding CAM utilization and outcomes are summarized in Table 2. Seventy-five percent (95% CI 70–81%) of physicians had never referred a patient to a CAM practitioner, but 44% (95% CI 38–51%) stated that they would likely refer a patient if a CAM practitioner was available at Mayo Clinic. Physicians aged 46 years or older were less likely to refer a patient to a CAM practitioner than were physicians younger than 46 years (33% versus 59%; $P < 0.001$). Women were 2.4 times more likely to refer than men ($P = 0.01$). Most physicians indicated that they discuss possible benefits and harmful outcomes of CAM therapies with 25% or less of their patients. More than half the physicians (63%; 95% CI 57–69%) stated that the patient initiated the discussion about benefits and risks of CAM therapy. These responses did not differ significantly on the basis of age, sex, division, years in practice or percentage of time dedicated to patient care.

Fifty-seven percent (95% CI 50–64%) of physicians thought that the incorporation of CAM therapies would have a positive impact on patient satisfaction and 8% (95% CI 5–12%) thought the impact would be negative. Forty-eight percent (95% CI 41–54%) of physicians believed that the incorporation of CAM therapies into the Mayo Clinic practice would have a positive impact on attracting more patients and 11% (95% CI 7–15%) believed it would have a negative impact.

Familiarity and Experience

Physicians' responses to questions regarding their familiarity and experience with various CAM therapies are shown in Table 3. Of the treatments indicated, biofeedback was the one most physicians (47%; 95% CI 40–53%) were familiar with and felt comfortable counseling their patients about, followed by massage (41%; 95% CI 34–47%), and chiropractic and relaxation therapy (38% each; 95% CI 32–45%). Energy healing was the least familiar CAM treatment to the surveyed physician group. Of the herbs listed, St John's wort, saw palmetto and garlic were most familiar to the physicians and those they felt most comfortable counseling patients about. More than half the physicians surveyed were unfamiliar with the medical use of feverfew and kava.

On average, physicians felt knowledgeable and comfortable counseling patients about 3 (range 0–13) of 13 listed treatments/techniques and about 2 (range 0–10) of 10 listed herbs. Physicians' responses were not significantly different on the basis of any characteristic. Physicians were unfamiliar with 3 of 13 treatments/techniques, with no significant difference in responses. Physicians were unfamiliar with 2.7 of 10 herbs; men were unfamiliar with 2.9 and women with 1.9 ($P = 0.009$). No other characteristic affected response. More than half the physicians indicated that it was difficult (52%; 95% CI 45–59%) or very difficult (10%; 95% CI 6–14%) to find reliable information at Mayo Clinic regarding the use of CAM treatments and only 4% (95% CI 2–8%) said it was easy

Table 2. Physicians' responses to questions regarding CAM utilization and outcomes

Question	Response (%)
(1) How likely is it that you would refer a patient to a CAM practitioner (if available at Mayo Clinic Rochester) for treatment of an ailment?	
Extremely likely	16
Somewhat likely	28
Neither likely nor unlikely	13
Somewhat unlikely	24
Extremely unlikely	19
NR	0
(2) Have you ever referred a patient to a CAM practitioner?	
Yes	24
No	75
NR	1
(3) With approximately what percentage of your patients do you talk about possible benefits of using CAM therapies?	
0–25	88
26–50	7
51–75	2
76–100	2
NR	1
(4) With approximately what percentage of your patients do you talk about possible harmful outcomes of using CAM therapies?	
0–25	64
26–50	17
51–75	11
76–100	7
NR	1
(5) Who usually initiates discussions of benefits and risks of a CAM therapy?	
I initiate	26
Patient initiates	63
Third party initiates	1
Not applicable	9
NR	1
(6) To what extent do you believe that the incorporation of CAM therapies into the Mayo Clinic Rochester practice would result in increased patient satisfaction?	
Major positive impact	12
Somewhat positive impact	45
Unsure	34
Somewhat negative impact	6
Very negative impact	2
NR	1
(7) To what extent do you believe that the incorporation of CAM therapies into the Mayo Clinic Rochester practice would attract more patients?	
Major positive impact	8
Somewhat positive impact	40
Unsure	41
Somewhat negative impact	8
Very negative impact	3
NR	0

CAM, complementary and alternative medicine; NR, no response.

Table 3. Physicians' responses to questions regarding familiarity and experience with various CAM treatments, techniques and herbs

CAM therapy	Response (%)				
	Unfamiliar	Limited familiarity	Understand proposed medicinal use but uncomfortable counseling patients	Understand proposed medicinal use and comfortable counseling patients	No response
Treatment/technique					
Acupuncture	4	30	45	21	0
Chiropractic	5	28	29	38	0
Massage	6	25	27	41	1
Homeopathy	21	40	23	16	0
Herbal medicine	10	34	35	21	0
Megavitamin therapy	18	27	25	30	0
Biofeedback	6	19	28	47	0
Spiritual healing	14	34	28	22	2
Aromatherapy	40	33	19	8	0
Energy healing	59	24	12	5	0
Magnetic therapy	44	30	14	12	0
Naturopathy	53	28	12	7	0
Relaxation therapy	13	25	24	38	0
Herbs					
Kava	52	27	11	10	0
Feverfew	66	19	10	5	0
Ginger	28	39	22	11	0
Garlic	9	34	27	28	2
Valerian	50	26	13	11	0
St John's wort	7	30	30	33	0
Ginseng	14	36	32	18	0
Saw palmetto	15	29	22	32	2
Echinacea	17	33	28	22	0
<i>Ginkgo biloba</i>	12	33	29	26	0

CAM, complementary and alternative medicine.

or very easy. A total of 49% (95% CI 43–56%) of physicians indicated that it was difficult or very difficult to find reliable information about herbs and 15% (95% CI 11–20%) said it was easy or very easy.

Physician Attitudes

Physicians' responses to questions about their attitudes toward CAM are summarized in Tables 4 and 5. Whereas 41% (95% CI 34–47%) of physicians neither agreed nor disagreed that physicians' knowledge of CAM had an impact on clinical outcomes of their patients, about half agreed that the physician's spiritual beliefs and practices are important in healing and that CAM treatments have true impact on the treatment of symptoms, conditions and diseases.

Most physicians agreed that they should have knowledge about the most prominent CAM treatments and that the spiritual beliefs and practices of patients are important for their healing (Table 4). Although 67% (95% CI 60–73%) agreed that some CAM therapies hold promise for the treatment of symptoms, conditions and diseases, 70% (95% CI 64–76%)

of the physicians stated that the current practice of CAM therapies in the United States represents a threat to the health of the public.

Of 10 impact factors that could affect physicians' attitudes toward CAM, only 2 were chosen by more than 50% of the respondents to have high or definite impact (Table 5): results of randomized controlled trials (88%; 95% CI 83–92%) and evidence demonstrating the treatment's mechanism (52%; 95% CI 45–59%). None of the physician characteristics significantly affected response. Overall, 70% (95% CI 64–76%) of respondents believed that Mayo Clinic should offer proven CAM therapies to patients and only 12% (95% CI 8–16%) stated that CAM should not be offered.

Discussion

It seems clear that CAM will be a part of health care for much of the US population for the foreseeable future. Fortunately, research in this realm has been growing rapidly (10,11). In the United States this effort has been led by support from the National Institutes of Health National Center for

Table 4. Physicians' extent of agreement with statements regarding attitude

Statement	Response (%)			
	Agree	Neither agree nor disagree	Disagree	No response
Physician knowledge of CAM practices leads to better patient outcome	30	41	28	1
Physician's spiritual beliefs and practices important for patient healing	52	26	22	0
Patient's spiritual beliefs and practices important for patient healing	87	7	4	2
Physicians should have knowledge about the most common CAM therapies	82	13	5	0
CAM therapy has impact on symptoms, conditions and/or diseases	50	25	24	1
Some CAM therapies hold promise for treatment of symptoms, conditions and/or diseases	67	19	13	1
Counseling on nutrition toward prevention of chronic disease should be a major role of physicians	85	9	6	0

CAM, complementary and alternative medicine.

Table 5. Physicians' ratings of the impact of various factors on their attitude toward CAM therapies

Impact factors	Rating of impact (%)					
	None	Minimal	Moderate	High	Definite	No response
Personal experience; positive results when using therapy on myself	11	29	32	18	9	1
Recommendations by family and friends who have tried the therapy	22	48	21	7	1	1
Recommendations by colleagues who have used the therapy on themselves	14	36	33	14	2	1
Recommendation of a medical specialist or consultant to whom you have referred a patient	11	20	43	19	5	2
Case reports in CAM journals	38	43	16	2	0	1
Case reports in standard medical journals	17	32	33	12	3	3
Retrospective case-control studies reported in standard medical journals	8	28	40	17	5	2
Prospective randomized controlled clinical trials	1	1	9	38	50	1
Evidence demonstrating the treatment's physiologic mechanism	3	11	32	31	22	1
Your clinical experience in your patient population	5	16	48	21	9	1

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Complementary and Alternative Medicine. Hence, it is reasonable to assess the current attitudes and knowledge base of practicing physicians at a major academic center, to determine what effect new knowledge in this area has had on practice. Such assessments can provide guidance regarding the educational needs of physicians, which will help them remain as current as possible with this evolving aspect of health care. With the documented reluctance of patients to disclose their use of CAM (12,13), physicians must take a more active role in initiating discussions about CAM, which requires them to be familiar with this aspect of medicine (14).

In general, most physician respondents were open to the concept of CAM, as evidenced by their endorsement of the statements that offering CAM at our institution would increase patient satisfaction and increase our ability to attract patients, and by 44% (95% CI 38–51%) being willing to refer to CAM practitioners if they were available on campus. Women and younger physicians were more likely to express a willingness to refer patients, which agrees with a recent survey by Kurtz *et al.* (15) and studies of patient usage of CAM, most of which have suggested greatest use in women versus men (16) and in younger versus older age groups (17–19). However,

in a review of 19 surveys conducted between 1982 and 1995 (6), 3 found no differences in referral rates for CAM by age (20–22). One of these surveys (23) found that referral rates for CAM were higher among female physicians, and three found no difference in referral rates by sex (20–22). Across surveys, acupuncture had the highest rate of physician referral (43%), followed by chiropractic (40%) and massage (21%). Findings from a survey mailed to a random sample of California physicians showed a significant inverse correlation between age and positive CAM behavior (i.e. their current use or recommendation of CAM treatments). It also showed a positive association with their use of computer technology for self-education (e-mail, Web sites, and personal digital assistants, and PubMed and MEDLINE access and use) and communication with peers (24).

Most published surveys indicate that the surveyed physicians agree that they should have knowledge about the most common CAM therapies, with a high percentage (62–81%) wanting to receive more education on CAM therapies (24–26). Our finding that most of the physicians surveyed stated that CAM therapies in the United States present a threat to the health of the public, while 67% (95% CI 60–73%) agreed that

some CAM therapies hold promise for the treatment of symptoms, conditions and diseases could be interpreted as a plea for rigorous evaluation of CAM therapies rather than empiric use of them.

An important finding from the present survey is the clear challenge encountered by physicians who want to discuss CAM. Many physicians do not feel adequately prepared to counsel patients about their use of CAM. This may not be surprising, given that many of the respondents went through medical school and residency at a time when CAM was not widely discussed and rarely included in medical school curricula. One criterion proposed by Eisenberg *et al.* (27) for considering a modality to be CAM was that it was not taught widely at US medical schools. However, by 1998, 64% of medical schools had incorporated some element of CAM into their curricula (28), and students of medical sciences have recently voiced their interest in evidence-based CAM (29). When CAM education is introduced in medical schools, students should have an opportunity to experience CAM practice, and educators should have evidence-based strategies to distinguish useful from useless interventions, the final goal being to educate doctors to understand and practice two medical systems properly (30).

The finding that most physicians found it difficult or very difficult to find reliable information at Mayo Clinic about CAM treatments or techniques (62%; 95% CI 55–68%) and herbs (49%; 95% CI 43–56%) was unexpected. Licensed electronic databases (e.g. Natural Medicines Comprehensive Database, <http://www.naturaldatabase.com/>) have been available on any computer within our system for several years. Because every patient room or other facility where patient care might occur has a dedicated computer, few physicians should have reported difficulty in accessing CAM information, but most physicians did report difficulty. Therefore, an educational campaign has been initiated through presentations to individual clinical divisions, seminar series and other departmental activities. Demonstrating real-time searches for dietary supplements has been extremely helpful in highlighting the tools associated with these databases, such as effectiveness ratings and checks for drug–herb interactions. Response from physicians who have participated in such demonstrations shows that such databases have been very effective at meeting the needs of clinicians in counseling a patient regarding common CAM therapies.

The present study has several limitations. First, as with many physician surveys, the response rate was lower than desired. In reviewing the literature, similar physician surveys have yielded response rates between 17.5% (31) and 72% (25). Thus, results should be interpreted with caution because those with strong feelings toward CAM (for or against) may have been more likely to respond to the survey. The survey also is limited in that it only included physicians within the Department of Medicine. Attitudes and knowledge about CAM could be considerably different in physicians in different departments. Thus, extrapolation of the results to other physicians or care providers is not supported. Finally, these

results apply to one academic center—attitudes and knowledge may be very different at different institutions. Some academic centers have had CAM centers for 10 or more years. Some have no CAM infrastructure at all. It would be interesting to compare attitudes and knowledge across such varied practice settings.

In conclusion, we believe that the results of this survey highlight the challenges faced by physicians, who are increasingly dealing with issues regarding CAM. First, although many physicians are interested in helping their patients make informed decisions, most do not feel qualified to do so. Clearly, physicians need resources that are evidence-based and readily available. In this rapidly evolving realm, electronic databases may be a critical element, but just having them available is not enough. Making sure users know how to access the databases and perform basic functions within common ones is clearly an investment worth making. For cases that are very complex or involve several methods, having an institutional resource (e.g. consult service or other evidence-based clinical program) available may be helpful. By facilitating physicians' desire to help their patients navigate this complex realm, a coordinated CAM program at an academic medical center can help ensure that all patients receive evidence-based information with which to make decisions about CAM.

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