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Complementary and Alternative Medicine: What's It All About?

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ABSTRACT

A number of health-related interventions—from widespread therapies such as acupuncture, herbal medicine, homeopathy and yoga, to less well-known modalities such as Feldenkrais, iridology, reflexology and reiki—have increasingly come under the general heading of complementary and alternative medicine (CAM). A few, such as biofeedback, chiropractic and physical therapy, are considered conventional by some, alternative by others. Several national surveys estimate that around 40% of the US populace uses a CAM therapy in a given year. While a few people use CAM therapies instead of conventional medicine, the vast majority of CAM users continue to access the official health care system. Many, however, do not discuss their CAM use with their physician. Medical doctors, for their part, are sharply divided on their attitudes toward CAM, with strong advocates and vehement opponents writing and speaking about this issue. CAM therapists are even more diverse, spanning the spectrum from conventional-appearing registered and certified practitioners to iconoclasts promoting anomalous therapies in the place of conventional treatment. The majority, however, both respect and want to work with conventional medicine, as do their patients. Nearly everyone is calling for more and better evidence, and an ever-increasing number of randomized controlled trials and meta-analyses are now appearing in the literature. Over the past few years, a number of calls for "integrated medicine" have been made, and a few attempts at integrating CAM and conventional medicine have been launched. This article reviews these issues, citing our own interview-based work and the relevant literature. Whether the CAM phenomenon represents a short-lived social movement or the beginnings of a radical transformation of medicine has yet to be determined.

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BACKGROUND

The term "complementary and alternative medicine" (CAM) is a term used to refer to a broad range of healing modalities,[1] a number of which are listed in Table 1. In 1993, David Eisenberg and colleagues at the Harvard Medical School loosely equated CAM with "unconventional medicine," defining it as "medical interventions not taught widely at US medical schools or generally available at US hospitals."[2] Although this is the most widely cited definition to date, it does raise the problem of shifting boundaries as therapies become adopted or excluded from conventional practice. Edzard Ernst, head of the Department of Complementary Medicine at the University of Exeter and arguably the world's leading authority on CAM, provides the following definition: "diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine."[3,4] This paper will review several of the issues associated with this emerging phenomenon.

Eisenberg et al's 1993 article sent tremors through the medical community by providing evidence of CAM's emerging prevalence. For instance, their 1991 random-digit-dial nationwide survey estimated a 33.8% prevalence-of-use rate, 425 million yearly visits to CAM practitioners (compared to 388 million visits to primary care physicians), and a total expenditure of $13.7 billion. A follow-up study in 1997[5] reported significant increases in CAM use, with per annum prevalence up to 42.1%, visits at 629 million, and expenditures "conservatively estimated" at $27 billion. For comparison, Americans made 386 million visits to primary care physicians in 1997 and paid out-of-pocket costs of $9.1 billion for hospitalizations and $29.3 billion for all physician services.[5] Although Eisenberg's surveys are the most methodologically rigorous to date, they are not the only data sources available. Astin, using data from a representative national postal survey, estimated CAM

use at 40% in 1995.[6] Landmark Health Systems reported a 42% rate of CAM use following a 1500 household random national telephone survey in 1997.[7] *Consumer Reports* polled 46,000 subscribers in May 2000, estimating prevalence of CAM use among their readers at 35%.[8] Kessler et al have recently reported that more than 50% of respondents with anxiety and depression use CAM therapies.[9] While retrospective looks at conventional health care databases have yielded somewhat smaller estimates,[10,11] there can be no doubt that CAM use grew rapidly in the 1990s, and is today an important part of health care in the US and throughout the world.[4,12]

Digesting this somewhat uncomfortable news, the US medical and research communities have begun asking appropriate questions: "Who are these CAM users? Why are they choosing CAM therapies? Which therapies are they choosing? Do they use these along with, or instead of, conventional treatments? Do they tell their doctors? What do physicians think of this? Who are the CAM therapists? What is their background, training, certification, and regulation? What is the evidence for effectiveness of these therapies? Should any CAM therapies be adopted or adapted? Is integration possible? Is it desirable? Is the trend toward CAM a short-lived phenomenon, or are we at the beginning of a new era in medicine?" This article is an attempt to report and interpret research-based answers to these questions, as they stand today.

The Eisenberg[5] and Astin[6] articles combine with other reports[7-13] to provide a rough picture of CAM users. First and foremost, they are people with health concerns, people who are trying to treat or prevent illness. People with chronic health problems are 2 or 3 times more likely to seek CAM therapies than are their healthy counterparts. Although there are positive associations with education, income and female gender, these predictors are rather poor. Women, people with college educations, and people aged 40-59 are, in general, 10% to 40% more likely to use CAM therapies than are their counterparts. Somewhat surprisingly, attitudes towards conventional medicine may or may not predict CAM use, with studies sharply divided as to whether or not dissatisfaction with conventional care leads to choosing CAM.[5-8,10,11,13,14]

In his 1998 *JAMA* article, Astin used the results of a nationwide survey to argue that changes in underlying belief structures were at the root of much of CAM's growth.[6] His study found that people whose values centered on environmentalism,

Table 1. Examples of CAM therapies

Acupuncture	Feldenkrais	Music therapy
Acupressure	**Folk remedies**	Naturopathy
Aromatherapy	**Herbal medicine**	Neuromuscular therapy
Art therapy	**Homeopathy**	Phytotherapy
Astrology	Hypnosis	**Prayer**
Ayurvedic	**Imagery**	Reflexology
Biofeedback	Iridology	**Relaxation**
Chinese medicine	**Lifestyle diet**	Reiki
Chiropractic	**Massage**	**Self-help group**
Craniosacral therapy	Meditation	Shiatsu
Dietary supplements	**Megavitamins**	**Spiritual healing**
Energy healing	Midwifery	Tai chi
Exercise	Mind-body therapy	**Yoga**

Therapies in bold are those identified as most common by Astin (1998) and Eisenberg (1998)

Table 2. Characteristics distinguishing CAM from conventional medicine

Conventional Medicine	***Complementary/ Alternative Medicine***
More reductionistic	More holistic
More controlling	More empowering
More deductive	More inductive
More generalizable	More individualistic
More scientific	More intuitive

These distinctions come from interviews, and are therefore opinion-based as well as relative.

feminism, and personal spiritual growth (defined as "creatives" by Paul Ray[15]) were more than twice as likely to use CAM therapies. Our own work in Madison[16] suggests that issues of holism, empowerment, accessibility, and legitimacy are important in defining CAM, and in distinguishing it from conventional medicine. While conventional medicine is seen as more scientific and hence more legitimate, CAM therapies are described as more intuitive, individualized, empowering, and holistic (Table 2). In our research so far, we have formally interviewed 71 practitioners and users of CAM, using open-ended questions, audiotaped interviews, and multidisciplinary review of transcripts to seek a deeper understanding of attitudes, beliefs and values influencing health-related behaviors. Table 3 provides a list of the issues that arise repeatedly.

Other qualitative researchers have provided additional windows onto the CAM phenomenon. For example, Kelner and Wellman[17] conducted 300 in-depth interviews with patients seeing family physicians, chiropractors, acupuncturists/Chinese medicine doctors, naturopaths and reiki practitioners (60 in each group). They stressed the interviewees' preferences for holistic and individualized care,

Table 3. CAM issues organized into 4 themes

Holism	*Empowerment*	*Access*	*Legitimacy*
Acceptance	"Client" vs. "Patient"	Availability	Acceptability
Attitudes of practitioners	Education	Awareness	Certification
Communication with providers	Healing as active process	Barriers	Credentials
Community	"Healing" vs. "Treating"	Constraints	Credibility
Continuity	Listening	Costs vs. Benefits	Efficacy
Empathy	Making choices	Cultural practices	Evidence
Feedback	Nourishing	Determinants	Formal systems
Healing energy	Open-mindedness	Economic barriers	The "grapevine"
Limits to conventional medicine	Personal treatment	Insurance	Informal networks
Mind-body integration	Responsibility	Jargon	Institutionalization
Patient-practitioner alliance	Understanding	Language barriers	Licensing
Practice style	Self-directed	Logistic barriers	Organizations
Psychological	Strengthening	Payment	Regulation
Spirituality	Survive vs. Thrive	Purchasing	Research
Staying healthy	Transcendence	Profits	Respect
Tradition	Uniqueness	Referrals	Scientific proof
Practitioners working together		Word-of-mouth	

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reporting that "the choice of type of practitioner(s) is multidimensional and cannot solely be explained either by disenchantment with medicine or by an 'alternative ideology'." However, they did note that "this study confirms that an alternative ideology does influence some individuals to consult unconventional practitioners." Regarding empowerment, these authors noted that "individuals in this study who have chosen to try alternative treatments have essentially taken their health and well-being into their own hands."

The Eisenberg,[5] Astin,[6] and Landmark,[7] reports provide the most reliable assessments of which CAM therapies people are using, and what they are using them for. Eisenberg reported that the following therapies were used for health reasons by at least 1% of Americans: self-prayer (35.1%), relaxation techniques (16.3%), herbal medicine (12.1%), massage (11.1%), chiropractic (11.0%), spiritual healing by others (7.0%), megavitamins (5.5%), self-help group (4.8%), imagery (4.5%), commercial diet (4.4%), folk remedies (4.2%), lifestyle diet (4.0%), energy healing (3.8%), homeopathy (3.4%), hypnosis (1.2%), biofeedback (1.0%) and acupuncture (1.0%). The Landmark survey reported similar prevalence-of-use numbers: herbal therapy (17%), chiropractic (16%), massage therapy (14%), vitamin therapy (13%), homeopathy (5%), yoga (5%), acupressure (5%), acupuncture (2%), biofeedback (2%), hypnotherapy (1%), and naturopathy (1%). Astin and Eisenberg report the following as most common reasons for using CAM: anxiety, allergies, arthritis, addictive problems, chronic pain, depression, diabetes, digestive problems, fatigue, headaches, high blood pressure, lung problems, musculoskeletal problems (back pain, neck pain, strains and sprains) and skin problems. Problems that bring patients to CAM practitioners are similar to those bringing them to conventional clinicians. However, there is a tendency for patients with chronic conditions and with problems not responding to conventional therapies to seek CAM.

There appears to be a gap between conventional medical providers and their patients regarding attitudes related to CAM. While Eisenberg's 1997 survey revealed that more than 90% of people seeing a CAM practitioner had also seen a medical doctor, less than 40% had discussed this CAM use with their physician.[5] The probable reasons for nondisclosure are multiple: 1) Doctors don't ask because they don't want to know and/or don't feel they have the time; and 2) Patients feel reluctant to volunteer such information because they are afraid doctors will think less of them and/or they don't feel it's relevant. Our interview-based research suggests that these reasons are all partially true, and that there may indeed be a belief-and-values gap between scientifically-trained physicians and the general public. Leading academic physician editorialists have done little to bridge the apparent chasm. In an editorial introducing the 1998 *JAMA* alternative medicine theme issue, editors Fontanarosa and Lundberg wrote: "There is no alternative medicine. There is only scientifically proven, evidence-based medicine... or unproven medicine, for which scientific evidence is lacking."[18] *New England Journal of Medicine* editors Angell and Kassirer weighed in on the "the risks of untested and

unregulated remedies," arguing that "it is time for the scientific community to stop giving alternative medicine a free ride."[19] Other writers have been even less charitable. For example, Ziment wrote, "the spreading popularity of herbal and other forms of complementary and alternative medicine is a phenomenon that progresses on the wings of faith that soars beyond the conventional bounds of science and logic."[20] Beyerstein claims that the use of CAM results from "common errors of reasoning."[21] Sampson writes "CAM therapies are anomalous practices for which claims of efficacy are either unproved or disproved."[22]

But the real gap may not be as wide as these writings suggest. Several surveys show that practicing physicians view CAM more positively. A 1999 review of 25 surveys of physicians reported the following average yearly referral rates to CAM: acupuncture (43%), chiropractic (40%), massage (21%), homeopathy (15%) and herbal medicine (4%).[23] Physicians on average reported some "belief in efficacy" of CAM therapies for: chiropractic (53%), acupuncture (51%), massage (48%), homeopathy (26%) and herbal medicine (13%). A separate 1995 "meta-analysis" of 12 surveys of physicians' attitudes toward CAM summarized physician belief-in-effectiveness as 46 +/- 18 on a scale of 1 to 100.[24] A 1994 survey reported that approximately 60% of physicians recommended CAM therapies or referred to CAM providers.[25] Another reported that 68% "had been involved with complementary medicine" in the week prior to survey.[26] Although none of these results are generalizable in the sense that physician subjects were randomly drawn from comprehensive national listings, they do point to a higher level of CAM support than is often attributed to conventional medical doctors.

CAM therapists are a diverse group of people practicing a very diverse set of healing modalities. From Ayurvedic and traditional Chinese medicine (highly developed medical systems backed by thousands of years of experience) to chiropractic, homeopathy, naturopathy and osteopathy (developed in modern times by Euro-American physicians) to iridology, reflexology, crystals and many types of prayer, modern American CAM practitioners present more diversity than homogeneity. Even within a given CAM category, practitioners may exhibit more variance than is found in all of modern American conventional medical practice combined. In fact, it is quite possible that the burgeoning interest in CAM movement is partially a reaction to the standardization and dominance of "allopathic"

Table 4. Numbers of licensed providers in Wisconsin

Conventional	***Number***	***CAM***	***Number***
Registered nurses	56,175	Massage therapists	2,046
MD physicians	12,001	Chiropractors	1,453
Dentists	3,325	Acupuncturists	124
Physical therapists	3,092	Music therapists	60
Physician assistants	788	Art therapists	41
DO physicians	458	Dance therapists	7

Number of current licenses as of 6/1/00. Source: Wisconsin Provider Workforce Data, Wisconsin Department of Health and Human Services, Office of Health Care Information

medical practice in 20th century America.[27-29] It is, perhaps, somewhat of a reach to lump these disparate entities into a single category (CAM) defined solely by its contrast to the homogenous monolith of modern medicine. Instead, each therapy or therapeutic system should perhaps be evaluated on its own merits (as well as on its costs, risks and adverse effects).

Table 1 lists 39 CAM therapies; those highlighted in bold are the ones indicated by national surveys to be most common. In Wisconsin, the breadth and depth of CAM is less well known. Table 4 lists the numbers of CAM practitioners licensed in Wisconsin in 2000, with several conventional categories provided for comparison. Although it is likely true that the majority of CAM practitioners work outside the official system of certification and licensure and hence may not be included in Table 4, it is also fairly clear that there are more conventional than alternative providers. One survey, commissioned jointly by Wisconsin Public Radio and the *Wisconsin State Journal*,[30] sheds a small amount of light. Conducted in February 2000 using random-digit-dial telephone methods, this survey of 392 Wisconsin households reported that in the year prior to survey: 1) 82% visited a medical doctor; 2) 71% used vitamins or supplements; 3) 19% used an herbal remedy; 4) 15% visited a chiropractor; and 5) 2% visited an acupuncturist. Also relevant was the report that 20% would be willing to pay more for insurance if it included CAM coverage (69% would not; 11% were undecided). (This finding contrasts somewhat with Landmark's report that 67% thought that CAM coverage was very or somewhat important when selecting a health plan.[7]) The Wisconsin survey also asked, "Which of the following is the greatest barrier to attaining good health care for you and your family?" The percent of responders choosing options from a set list was as follows: insurers (28%), money (24%), physicians (14%), information (10%), hospital (4%).

Evidence-of-effectiveness is likely the most

important–and most contentious–issue for those trying to grapple with CAM. The conventional medical literature is full of references to the supposed lack of an evidence base for CAM. The emerging pro-CAM literature is full of references to the many "scientific" studies supposedly documenting CAM efficacy. As is often the case, the truth may lie somewhere in between. Given the hundreds of CAM therapies and the thousands of potentially answerable questions, the evidence base is admittedly less than one would like. But it is not devoid. For example, the Cochrane collaboration now reports more than 1000 CAM randomized controlled trials (RCTs) and about 3 dozen systematic reviews.[4,31,32] The National Institutes of Health has reviewed hundreds of studies of acupuncture, issuing a favorable report for several indications.[33] Homeopathy has been assessed by dozens of RCTs, with meta-analysts generally issuing favorable opinions.[34,35] Dozens of reasonable quality RCTs have been published on herbal medicines such as St. John's wort,[36] saw palmetto,[37] and ginkgo.[38,39] While evidence-of-benefit for these herbals is comparable to the vast majority of conventional treatments, effect size, cost-benefit, and adverse effect profiles are only now being addressed. In my own area of expertise, echinacea for upper respiratory infection, there are now 16 RCTs.[40,41] While the echinacea trials in general report positive results—and are comparable in size and quality to trials on conventional cold treatments—effect size and clinical significance are modest and uncertain. In summary, although there are a growing number of well-designed RCTs reporting benefit for various CAM therapies, there are today many more important questions than there are satisfactory answers.

Over the past several years, the conventional medical literature has included a fair amount of discussion regarding the possibilities, promises and perils of integrating CAM modalities within the conventional health care system.[42-44] Accounts of several initial attempts are now available for study. For example, the Center for Mindfulness in Medicine, Health Care and Society at the University of Massachusetts Medical Center has been operating for years.[45] Harvard Medical School has opened a Division for Research and Education in Complementary and Integrative Medical Therapies.[46] Beth Israel's Center for Health and Healing has announced plans to serve 50,000 patient visits per year with its staff of 9 physicians and practitioners of "homeopathy, acupuncture, Native American medicine and Chinese herbs."[47] Stanford University and UCLA have incorporated integrated services. A number of medical schools, residencies and fellowships are incorporating CAM into their educational missions.[48-51]

Perhaps the most important experiment in CAM integration is currently taking place in Washington, where in 1993 the state legislature passed a Health Care Reform Act mandating CAM coverage. Insurance carriers then sponsored a series of lawsuits, ending with the US Supreme Court's January 1999 decision to uphold the Ninth Circuit Court of Appeals' decision on the original law, interpreted as requiring coverage of most CAM therapies. The State of Washington Clinician Workgroup on the Integration of Complementary and Alternative Medicine has now published its first 3-year report, describing its efforts "to develop positive working relationships between health insurance companies and the complementary and alternative health provider communities."[52] As a results of these events, a number of models of CAM provision and CAM/conventional integration are now being tested. Reliable data, however, regarding health services availability, utilization, and costs, are not yet available.

Nationally, there is a trend toward CAM coverage. A 3-year study of 10 managed care organizations found that "the majority of the insurers interviewed offer some coverage for...nutrition counseling, biofeedback, psychotherapy, acupuncture, preventive medicine, chiropractic, osteopathy, and physical therapy."[53] This study concluded that consumer demand was the main impetus behind CAM coverage. They felt that the main barriers to CAM coverage were "lack of research on efficacy, economics, ignorance about CAM, provider competition and division, and lack of standards of practice."[53] The same authors reported a survey of "Californians in a Medicare risk product that offers coverage for acupuncture and chiropractic care."[54] Of the 728 respondents to 1587 surveys, 41% reported using CAM therapies, with 80% believing that they "received substantial benefit from their use."[54]
A separate national survey of 12 health insurance companies and 2 trade associations reported that the majority provided partial coverage for acupuncture, biofeedback and chiropractic.[55] Other CAM therapies were less well-covered. Relatively strong coverage of acupuncture, biofeedback and chiropractic was attributed to: 1) ability to fit into the existing diagnosis-based system; 2) willingness to be viewed as complementary rather than competing; 3) willingness to accept legitimacy standards such as educational and accreditation standards, licensure, and clinical practice guidelines; and 4) adequate and appropriate evidence-of-efficacy.[55]

DISCUSSION

To some extent, the hullabaloo surrounding CAM may be due as much to increased awareness as it is to rapidly changing health practices. Although important and growing, CAM is not new. Most CAM therapies have been around for decades, if not centuries. Ayurvedic and traditional Chinese medicine are based on traditions spanning millennia. Ethnic diversity and diversity in religious, political and social behaviors are widely recognized and often celebrated. Why not diversity in health care as well?

Historically, Americans have followed many different health care paths, sometimes converging, sometime diverging. In the 19th and early 20th centuries, physicians variously included teachings from chiropractic, faith healing, homeopathy, hydrotherapy, naturopathy, Native American medicine, osteopathy, Thomsonianism, and others.[56] Whole schools of "eclectic medicine" were founded. Conventional "allopathic" medical practice, one of many therapeutic modalities available in US towns and cities, began its path to dominance with the 1847 founding of the American Medical Association. By the early 20th century, following the transformation of agrarian America into a modern industrial society, conventional medicine had begun to retrench, centralize, and conform to "scientific" standards.[29] Orthodox medicine became increasingly dominated by pharmaceutical and surgical therapies. Following the 1910 Flexner report, rigid standards were adopted for certification of medical schools and for the licensure of physicians and allied professions.[29] Medical schools based in the eclectic, homeopathic and naturopathic traditions were closed, and several proponents were jailed. Osteopathy and chiropractic lost ground but survived, partly due to conformity and partly due to organized political action. By the 1950s and 1960s, standardized conformity hit its peak, with the miracles of modern American medicine extolled at home and abroad. Conventional medicine, and its partner the burgeoning pharmaceutical industry, had conquered the market. Allopathic physicians had come to think of themselves as the only legitimate medical entity. Yet, in the cracks and crevices of modern society, many unorthodox medical theories and practices had survived.

The resurgence of "complementary" and "alternative" medicine may in part be a reaction to the standardized dominance of allopathic medicine. It is also quite possible that Americans simply want to have more choice—more individualism—in their health care, as they do in the larger consumer-oriented society. Additionally, the renewed ascendance of CAM may be partly due to the collective desire for a "kinder and gentler" medicine, one that is more caring, empowering, and holistic. The movement towards a more humane, patient-centered medicine was evident decades ago, first with the publication of Engel's "biopsychosocial" paradigm,[57] then with the rapid rise of family and community medicine.[58-60] The resurgence of CAM may be another manifestation of this ongoing trend towards a more holistic, humanistic, patient-oriented, multidisciplinary medicine. Whether and to what degree incorporation of CAM within the dominant paradigm results in such an "integrated" medical system is an open, and looming, question. It should be fascinating to watch the answers play themselves out.

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