Characteristics of Licensed Acupuncturists, Chiropractors, Massage Therapists, and Naturopathic Physicians

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Background: **Despite the growing popularity of complementary and alternative medical (CAM) therapies, little is known about the professionals who provide them. Our objective was to describe the characteristics of the four largest groups of licensed CAM providers in the United States and to compare them with the characteristics of conventional physicians.**

Methods: **Random statewide samples of licensed acupuncturists, chiropractors, massage therapists, and naturopathic physicians living in Arizona, Connecticut, Massachusetts and Washington were interviewed by telephone. Sociodemographic, training, and practice characteristics of CAM providers were elicited and compared with data on conventional physicians published by the American Medical Association.**

Results: **More than 160 providers in each profession were interviewed. Participation rates ranged between 78% and 94% except for Arizona chiropractors (61%). The proportion of female respondents was highest for massage therapy (85%) and acupuncture and naturopathy (almost 60%) and was lowest for chiropractic (about 25%) and conventional medicine (23%). Except for acupuncturists, only 5% of CAM providers were nonwhite. CAM providers were more likely than conventional physicians to practice solo (51%–74% vs 26%, respectively), and less than 10% practiced with medical physicians. Massage therapists saw the fewest patients per week (about 14), and chiropractors and conventional physicians the most (about 100). Chiropractors and conventional physicians saw about 3 patients per hour compared with roughly 1 patient per hour for the other CAM professions. Interstate differences were small.**

Conclusions: **This characterization of CAM providers will help inform decisions about the future role of CAM providers in the health care system. (J Am Board Fam Pract 2002;15:378–90.)**

Americans frequently use complementary and alternative medical (CAM) therapies, and their use has increased substantially during recent years.[1,2] Despite the growing popularity of CAM therapies, little is known about the licensed health professionals who provide them, the patients they treat, the services they provide, or how CAM providers differ from medical doctors. The few published studies characterizing CAM providers or their practices have focused on their current and future contributions to the health care workforce,[3,4] retrospective chart reviews of a single profession,[5] and surveys of four CAM professions in one metropolitan area.[6–9] Only the chiropractic profession has reported data from national practice inventories.[10,11] This study provides unique information about the characteristics of the four largest groups of licensed CAM

Submitted, revised, 11 February 2002.

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This project was supported by grants from the Group Health Foundation, grants HS09565 and HS08194 from the Agency for Health Care Policy and Research, and grant AR43441–04S1 from the National Institutes of Health. In-kind support was provided by the Centers for Disease Control and Prevention.

Table 1. Numbers of Licensed Acupuncturists, Chiropractors, Massage Therapists, and Naturopathic Physicians Sampled and Interviewed, by State (1998–1999).

Profession and State*	Year of Survey	Number Licensed in State with In-state Address	Number in Random Sample	Eligible for Study† No. (%)	Eligible Interviewed No. (%)
Acupuncture					
Massachusetts	1999	508	180	111 (62)	101 (91)
Washington	1998	345	151	131 (87)	116 (89)
Chiropractic					
Arizona	1999	1,512	225	170 (76)	104 (61)
Massachusetts	1999	1,284	125	118 (94)	101 (86)
Massage Therapy					
Connecticut	1999	1,637	250	133 (53)	114 (86)
Washington	1998	6,194	200	134 (67)	112 (84)
Naturopathy					
Connecticut	1999	71	71	63 (89)	59 (94)
Washington	1998	286	200	142 (71)	111 (78)

*On 31 December 1998, the number of conventional nonfederal physicians (MDs and DOs) practicing in these four states was: Washington (15,254), Arizona (11,025), Connecticut (12,693), and Massachusetts (27,228).[14]
†Confirmed to be practicing in state and to have verifiable and functioning telephone number.

providers in the United States and compares their characteristics with those of medical doctors.

Methods

Study Goals

This study had two goals: (1) to describe the characteristics of representative samples of licensed providers in each of the four largest CAM professions (acupuncture, chiropractic, massage therapy, and naturopathy), and (2) to characterize the patients who visit these providers. This article describes characteristics of CAM practitioners, and a companion article characterizes patient visits.[12] Background information about these professions is included in the Appendix.

Sampling and Eligibility of Licensed Providers

Each of the four types of CAM providers was surveyed in one northeastern and one western state: acupuncturists in Massachusetts and Washington, chiropractors in Arizona and Massachusetts, and massage therapists and naturopathic physicians in Connecticut and Washington (Table 1). The Northeast and West were selected because these regions are where licensed CAM providers are concentrated.[4] Licensure listings of providers with in-state addresses were obtained from Washington (1998), Arizona (1999), Connecticut (1999), and Massachusetts (1999).

Providers without valid telephone numbers or not in practice were ineligible. Telephone directories and directories of national and state professional organizations were consulted when current telephone numbers were unavailable from licensure listings. The proportions of randomly sampled licensed providers who were ineligible ranged from 6% of chiropractors in Massachusetts to 47% of massage therapists in Connecticut. Lack of a valid telephone number was the predominant reason for ineligibility of acupuncturists in Massachusetts (34%) and massage therapists in Connecticut (39%), whereas not being in practice was slightly more common in the other samples. A sufficient number of eligible providers in each profession in each state were interviewed to yield at least 50 participants willing to collect data on 20 consecutive patient visits. The numbers of providers ultimately sampled from the licensure listings ranged from 71 to 250 (Table 1).

Survey Strategy

Researchers worked with professional associations to select a broad spectrum of leaders in each CAM community who were willing to telephone colleagues and sign letters explaining the study and encouraging participation. No financial incentives to participate were offered. Telephone interviews were then conducted in 1998 and 1999. Interviews for each profession were conducted in the western and northeastern states at the same time of year.

Table 2. Demographic Characteristics of Acupuncturists, Chiropractors, Massage Therapists, Naturopathic Physicians, and Conventional Physicians, by State (1998–1999).

Profession and State	Number	Age (years)			Percent Female	Percent Nonwhite	Percent Hispanic	Median Years in Practice
		Mean	(SD)	Median				
Acupuncture								
Massachusetts	101	47.3	(7.5)	47.0	58	19*	2	11.0
Washington State	116	43.1	(8.4)	43.0	56	23*	1	4.0
Chiropractic								
Arizona	104	42.0	(9.3)	41.0	19	5	5	10.5
Massachusetts	101	43.0	(7.9)	42.0	30	1	0	13.0
Massage therapy								
Connecticut	114	41.6	(9.0)	41.5	85	5	4	5.0
Washington State	112	40.6	(9.3)	41.5	85	5	4	4.0
Naturopathy								
Connecticut	59	43.6	(8.7)	42.5	58	5	0	9.0
Washington State	111	44.1	(9.2)	44.0	57	6	1	7.0
Conventional physicians								
All specialties	667,000†	—	—	45.0‡	23§	—	—	—

*Approximately 90% of the nonwhite acupuncturists in Massachusetts and Washington State were Asian or Pacific Islander.
†Source: American Medical Association.[14] Data are for all active physicians in 1998 (excludes inactive, not classified, and address unknown).
‡Source: American Medical Association.[14] This is estimated from AMA data indicating that 48% of active nonfederal physicians were less than 45 years of age.
§Source: American Medical Association.[14]

Comparative Data on Conventional Medical Physicians

Comparative data on the characteristics of conventional medical and osteopathic physicians (referred to as conventional physicians) were obtained from two American Medical Association (AMA) publications: *Socioeconomic Statistics*[13] and *Physician Characteristics and Distribution in the United States*.[14] Data in the former publication are based on about 3,800 responses (a 52% response rate) to a 1998 AMA survey of a random sample of nonfederal patient care physicians who had completed residency programs and were practicing in the United States. Doctors of osteopathy and physicians who spent less than 20 hours each week in patient care were excluded. Data were weighted to compensate for nonresponse bias. Data in the second AMA publication,[14] compiled from the AMA Physician Masterfile and the AMA Race File, describe professional and individual characteristics of all medical doctors in the United States as of 31 December 1998.

Statistical Methods

Chi-square tests and two-tailed Fisher exact tests were used to compare proportions, and two-tailed *t* tests were used to compare means. The conventional criterion for statistical significance, $\alpha = 0.05$, was used. Confidence intervals are not presented, but for the seven samples with between 101 and 116 respondents, the 95% confidence intervals for the percentages in the tables are always within 10 percentage points of the estimate. For percentages close to 10% or 90%, the 95% confidence intervals are within 6 percentage points. For Connecticut naturopathic physicians (n = 59), the 95% confidence intervals are 30% wider. Analyses were performed using SAS Version 8 (SAS Institute, Cary, NC).

Results

Participation Rates

Interview data were collected from more than 100 providers in each profession in each state, except one. Participation rates in seven of the eight samples were between 78% and 94% (Table 1). Arizona chiropractors were substantially less likely to participate than chiropractors in Massachusetts (61% vs 86%, respectively).

Demographic Characteristics

The average age of the responding CAM providers ranged between 41 and 47 years (Table 2). The proportion who were female ranged from less than 30% of chiropractors to almost 60% of acupunc-

turists and naturopathic physicians, and 85% of massage therapists. Roughly 5% of chiropractors, massage therapists, and naturopathic physicians were nonwhite. About 20% of acupuncturists were Asian. Less than 5% in each CAM profession were Hispanic, and less than 2% were African American. Interstate differences within each CAM profession were generally small. Conventional physicians were slightly older than most of the CAM provider types and much less likely than acupuncturists, massage therapists, and naturopathic physicians to be female (23% vs 55%–85%, respectively).

Training Characteristics

The median duration of basic training was 3 years for acupuncturists, 4 years for chiropractors and naturopathic physicians, and 600 to 650 hours for massage therapists, reflecting current standards in each profession. About 30% of the acupuncturists in Washington and Massachusetts received some or all their training outside the United States (mostly China or England). Postgraduate residency training was available only to chiropractors and naturopathic physicians. Completion of 1 year of residency training was more common among naturopathic physicians (23% in Connecticut and 10% in Washington) than chiropractors (5% in Arizona and 1% in Massachusetts). Almost all medical schools require 4 years to complete, and residency training of at least 3 years is standard.

Practice Characteristics

Although their average ages did not differ greatly, CAM providers reported substantial variation in median years in practice: less than 6 years for massage therapists, about 8 years for naturopathic physicians, and more than 10 years for chiropractors (Table 2). The only profession for which a substantial interstate difference in years in practice was found was acupuncture: 11 for Massachusetts acupuncturists and 4 for Washington acupuncturists. One third of acupuncturists in both states and naturopathic physicians in Washington were licensed in another CAM or conventional health profession (Table 3).

Between 50% and 75% of CAM providers, but only 26% of conventional physicians, practice solo (Table 3). Substantial fractions (27%–35%) of acupuncturists, massage therapists, and naturopathic physicians in Washington and acupuncturists in Massachusetts practiced in multidisciplinary groups. Less than 10% of CAM providers in all four professions practiced with conventional physicians.

Workload

The mean numbers of weeks of practice in a typical year ranged between 47 and 50 for all CAM provider types (Table 4). Mean hours of direct patient care in a typical week was roughly 15 for massage, 25 for acupuncture and naturopathy, and 30 for chiropractic. Differences in mean patient visits in a typical week was even greater, ranging from less than 15 visits for massage therapists to about 30 for acupuncturists and naturopathic physicians and nearly 100 for chiropractors. Chiropractors saw the most patients per hour of direct patient care (3.0–3.3) and massage therapists, the fewest (0.9). Interstate differences within each profession were small.

Conventional physicians reported similar numbers of weeks of work per year as acupuncturists, massage therapists, and naturopathic physicians, but almost 3 weeks less than chiropractors (Table 4). They spent many more hours than the CAM providers on direct patient care activities, however, with much of this difference the result of time spent outside the office (eg, in hospitals and nursing homes). General and family physicians see eight times as many patients per week in the office as do massage therapists, more than three times as many as acupuncturists and naturopathic physicians, but only slightly more than chiropractors. Conventional physicians and chiropractors see two to three times as many patients per hour of patient care as the other CAM providers. Because data for conventional physicians in Table 4 derive from a sample that excluded physicians spending fewer than 20 hours per week in patient care, the data on hours of practice and numbers of visits for this group are inflated slightly relative to that for CAM practitioners. Even so, fewer than 9% of nonfederal physicians were practicing less than 20 hours per week in 1999.[14]

Recent Trends

CAM providers who completed basic professional training before 1990 were compared with those completing training during the 1990s. Recent graduates of acupuncture and naturopathy programs were significantly more likely to be female than earlier graduates (data not shown). Recently trained acupuncturists were significantly more likely to be white, but nonwhite representation among naturo-

Table 3. Practice Characteristics of Acupuncturists, Chiropractors, Massage Therapists, Naturopathic Physicians and Conventional Physicians by State (1998–1999).

Profession, State	Number	Licensed in Other Health Profession (%)	Type of Practice: Solo (%)	Type of Practice: Single-Profession Group (%)	Type of Practice: Multidisciplinary Group (%)	Professions Most Often Practiced With
Acupuncture						
Massachusetts	101	16*	61	25	27	MT (21%) DC (11%)
Washington	116	33†	66	15	28	MT (20%) ND (8%)
Chiropractic						
Arizona	104	17‡	67	24	10	MD (8%) MT (6%)
Massachusetts	101	4§	74	23	11	MT (9%), PT/OT (4%)
Massage therapy						
Connecticut	114	10‖	73	19	16	DC (5%), PT/OT (5%)
Washington	112	8¶	71	22	29	DC (12%) AC (8%)
Naturopathy						
Connecticut	59	17**	51	46	13	AC (8%) MD (8%)
Washington	111	33††	54	20	35	MT (19%) AC (19%) MD (9%)
Conventional physicians (in active practice)						
United States	—	—	26‡‡	—	—	—

Note: Approximately 10% of complementary and alternative medicine practitioners split their time equally among two of the following: solo, multidisciplinary group, and single-specialty group practice (range: 1% of Arizona chiropractors to 22% of Washington massage therapists. The totals for type of practice, therefore, add to more than 100%.
MT = massage therapist, DC = chiropractic physician, AC = acupuncturist, PT/OT = physical therapist/occupational therapist, ND = naturopathic physician, MD = medical physician).
*Most commonly nursing (6%).
†Most commonly massage (9%), naturopathy (9%), and nursing (4%).
‡Most commonly physical therapy (13%) and acupuncture (5%).
§Most commonly nursing (2%).
‖Most commonly nursing (3%).
¶Most commonly counseling (4%).
**Most commonly acupuncture (10%). All others less than 2%.
††Most commonly chiropractic (8%), nursing (7%), acupuncture (6%), and midwifery (5%).
‡‡Source: American Medical Association.[13] This estimate is based on a sample of 3,826 physicians. The denominator is total number of patient care physicians in solo, 2-physician, group, or "other" practice.

pathic physicians in Washington increased significantly within the past decade. The average age at completion of basic training was about 6 years older for recent acupuncturist graduates and about 3 years older for recent graduates of the other CAM programs.

Recent graduates of naturopathic schools were more likely than pre-1990 graduates to have completed 1 year of residency training (13% vs 7% in Connecticut; $P = .39$; 30% vs 15% in Washington, $P = .046$). The proportion of CAM providers practicing in multidisciplinary groups was not significantly higher among more recent graduates.

Contributions to Health Care Workforce

Using data from Tables 1 and 4 and US Census data, we estimated the numbers of visits per year per 100 residents for each profession in each state and the number of practitioners per million population (Table 5). Estimated annual visits per 100 population was lowest for naturopathy (about 4) and acupuncture (about 8) and highest for chiropractic (about 100). Visit rates to massage therapists in Washington were almost triple those in Connecticut (49 vs 17 per 100). The estimated number of practicing CAM providers per million population was also lower for acupuncture and na-

Table 4. Workload of Acupuncturists, Chiropractors, Massage Therapists, Naturopathic Physicians, and Conventional Physicians by State.

Profession, State	No.	Weeks of Practice in a Typical Year		Hours of Direct Patient Care in a Typical Week			Patient Visits in a Typical Week			Visits per Hour of Direct Patient Care*
		Mean	(SD)	Mean	(SD)	Median	Mean	(SD)	Median	
Acupuncture										
Massachusetts	101	49.0	(2.5)	28.2	(13.9)	28.0	33.7	(24.7)	25	1.2
Washington	116	48.1	(5.2)	23.2	(12.0)	20.0	27.0	(21.1)	20	1.2
Chiropractic										
Arizona	104	50.2	(1.7)	30.0	(10.4)	30.0	101.4	(76.0)	85	3.3
Massachusetts	101	50.1	(1.5)	29.1	(9.5)	30.0	86.9	(62.5)	75	3.0
Massage therapy										
Connecticut	114	47.2	(7.1)	14.5	(12.0)	12.0	13.6	(11.3)	10	0.9
Washington	112	47.6	(6.0)	16.2	(8.5)	17.0	14.3	(9.1)	15	0.9
Naturopathy										
Connecticut	59	47.8	(3.6)	25.8	(10.6)	25.0	32.7	(18.9)	27	1.3
Washington	111	48.2	(3.1)	24.5	(12.2)	24.5	30.5	(24.7)	25	1.2
Conventional nonfederal physicians†										
All settings										
All physicians		47.3§	(0.1)‖	51.7¶	(0.3)‖	50¶	105.0**	(1.2)‖	100**	2.0
GP/FP‡		47.7§	(0.2)‖	51.3¶	(0.8)‖	48¶	125.0**	(2.9)‖	119**	2.4
Office care only										
All physicians		—	—	27.0††	(0.3)‖	30††	75.2‡‡	(1.1)‖	70‡‡	2.8
GP/FP‡		—	—	33.7††	(0.6)‖	35††	102.0‡‡	(2.6)‖	100‡‡	3.0

*Ratio of mean number of patient visits to hours spent on direct patient care in a typical week.
†Source: American Medical Association (AMA),[13] 1998 data for active nonfederal patient care physicians, excluding residents, who see 20 or more patients per week. Data for weeks of practice per year are for 1997, and from 1998 edition.
‡GP/FP = general and family practice.
§AMA,[13] Table 1, p 39.
‖Standard errors of the mean.
¶AMA,[13] Table 3, p 41.
**AMA,[13] Table 13, p 54.
††AMA,[13] Table 5, p 43.
‡‡AMA,[13] Table 14, p 55.

turopathy than for massage and chiropractic. Paralleling the data on per capita visits, the per capita supply of practicing massage therapists in Washington was almost triple that in Connecticut.

Discussion

The primary goal of this study was to provide fundamental descriptive information about the characteristics of representative samples of four major types of licensed CAM providers and to compare these characteristics with those of conventional physicians. The major findings are summarized and discussed below.

There are substantial demographic differences among CAM providers and between CAM providers and conventional physicians. Conventional physicians and chiropractors are predominantly male, whereas the other CAM professions are predominantly female, and acupuncture and naturopathy appear to be becoming more so with time. Although the percentage of medical students who are female now exceeds 40%,[17] this study found no evidence of an increasing prevalence of women among the more recent graduates of chiropractic colleges in the two states included in this study. Except for acupuncture, which includes a substantial number of Asian practitioners, only about 5% of CAM providers are not white.

In the United States, chiropractors, naturopathic physicians, and conventional physicians have 4-year professional training programs that emphasize standard basic science, pathology, patient evaluation, and profession-specific clinical intervention training. Variation exists, however, both within and between programs in terms of quality and quantity of exposure. For example, medical school training emphasizes clerkship rotations, whereas chiropractic and naturopathy allocate larger proportions of

Table 5. Estimated Total Visits and Visits per 100 Population to Acupuncturists, Chiropractors, Massage Therapists, Naturopathic Physicians, and Conventional Physicians, by State.

Profession, State	Estimated Number in Practice*	Mean Number of Visits per Provider per Year†	Estimated Visits to Profession per Year‡	State Population (in millions)§	Estimated Visits per Year per 100 Population‖	Practitioners per Million Population (estimated)
Acupuncture						
Massachusetts	315	1,651	520,065	6.2	8	51
Washington	300	1,299	389,700	5.8	7	52
Chiropractic						
Arizona	1,149	5,090	5,848,410	4.8	122	239
Massachusetts	1,207	4,354	5,255,278	6.2	85	195
Massage Therapy						
Connecticut	868	642	557,256	3.3	17	263
Washington	4,150	681	2,826,150	5.8	49	716
Naturopathy						
Connecticut	63	1,563	98,469	3.3	3	19
Washington	203	1,470	298,410	5.8	5	35
Conventional physicians (all specialties)						
United States	514,093¶		1.4 billion**	270.3 (US)††	520	1,902

*Number licensed in state multiplied by estimated percentage actually practicing in state (from Table 1).
†Mean number of weeks practiced per year multiplied by mean number of visits per typical week (from Table 4).
‡Estimated number of providers in practice multiplied by mean number of visits per provider per year.
§Source: US Census Bureau.[15]
‖Estimated number of visits per year to profession divided by population of state multiplied by 100.
¶Source: American Medical Association.[14] Patient care nonfederal physicians who have completed residencies and are practicing in U.S.
**Source: National Center for Health Statistics.[16] Excludes telephone visits.
††Source: American Medical Association.[14]

their curricula to skill development training in classroom or laboratory settings.[18–21]

Although formal, paid, multiyear residencies and fellowships are standard in medical training and at least 1 year of internship is required for medical licensure, postgraduate training is not required for licensure in any of the CAM professions. Limited postgraduate training opportunities for chiropractors and naturopathic physicians have become available only recently, likely explaining the higher prevalence of residency training observed among more recent graduates. CAM providers frequently enter into associateships with established clinicians,[11] providing exposure to clinical problems commonly seen by the profession (see the Appendix and Eisenberg et al[22] for additional information on CAM training).

In contrast to conventional physicians, most CAM practitioners practice alone or with colleagues in the same profession. About 1 in 4 acupuncturists, massage therapists, and naturopathic physicians work in multidisciplinary groups with other health professionals, primarily other CAM providers. Less than 10% practice with medical doctors, and despite the growing interest in integrated care,[23] the more recent graduates of CAM programs are no more likely to be practicing with conventional physicians than earlier graduates. This finding is supported by evidence from national studies that the percentage of chiropractors working in multidisciplinary settings has remained about 4.5% throughout the 1990s.[10,11] Thus, despite large increases in use of CAM services by patients,[2] there do not appear to be any increases in multidisciplinary practices.

In Washington State a work group was established by the Office of the Insurance Commissioner to explore issues affecting the integration of CAM and conventional services.[24] The group found differences in syntax and health paradigms, as well as lack of exposure to and familiarity with different types of providers as key barriers to integration. Evidence of effectiveness and efficacy, as well as care guidelines on CAM, will likely be necessary for integration to occur. In addition, concerns about the risk of malpractice suits could partly explain the low occurrence of collaborative practices between CAM practitioners and medical physicians. In fact,

a recent analysis suggests that practicing in a group might increase shared liability between the CAM providers and the medical doctor.[25]

The nature of weekly practice varies substantially among the professions studied. Unlike CAM practitioners, conventional physicians spend a substantial amount of time on care activities outside the office (eg, hospital and nursing home). Acupuncturists and naturopathic physicians see many fewer patients per week than do chiropractors and conventional physicians, even though all four professions spend 25 to 30 hours per week on office-based patient care. Massage therapy is clearly a part-time profession for most therapists, involving only about 15 hours of patient care and 15 visits per week. Although part-time practice might in part reflect lifestyle preferences, massage therapy is physically demanding, and many therapists find it difficult to treat patients for more than 20 hours per week.

Even though the per capita visit rates to conventional physicians greatly exceed those to the CAM providers included in this study, substantial numbers of visits are made to CAM providers. Chiropractors, who are licensed in all 50 states, provide an estimated 5 million visits per year in both Arizona and Massachusetts, about 100 chiropractic visits per 100 residents per year. Despite the emphasis on acupuncture in the media and in CAM research, the visit rates to acupuncturists were relatively low in Massachusetts and Washington (about 8 visits per 100 residents). Visit rates to naturopathic physicians in Connecticut and Washington (about 4 visits per 100 residents) were also low.

The growing popularity of massage[2] was evident in Washington, where there were almost 3 million patient visits per year to massage therapists. The contributions of massage therapists were substantially larger in Washington than in Connecticut (49 vs 17 visits per 100 residents), possibly reflecting differences in attitudes about massage or differences in insurance coverage or scope-of-practice laws. In fact, since 1995, state law in Washington has mandated that health plans provide access to all licensed health professions, including massage therapists. Visit rates for acupuncturists and naturopathic physicians in Washington were not much different from those in other states, however, so there could be other reasons for the relatively high visit rate to massage therapists in Washington. That the number of practicing massage therapists per capita is almost three times as high in Washington as in Connecticut (Table 5) could explain the large difference in visit rates. In fact, for each CAM profession the state with more CAM providers per capita had a commensurately higher per capita visit rate. Similar positive geographic correlations between surgeon supply and operation rates have been reported.[26–28]

Part of the differences among the CAM professions in per capita visits can be attributable to variability in visits per year per patient to specific types of providers. For example, a 1998 national survey found that the mean number of visits per year per user was 9.8 to chiropractors, 8.4 to massage therapists, and 3.1 to acupuncturists,[2] compared with a mean of 5.2 visits to conventional physicians per year, 3.2 of which were office visits.[16]

The results of this study are consistent with those for the national survey of chiropractors in terms of hours of practice per week, ethnicity, and percentage in solo practice.[11] The proportion of chiropractors who were female in the national survey was the same as in the Arizona sample (19%), but lower than in Massachusetts (30%). The percentage of chiropractors practicing in multidisciplinary groups in this study (10%–11%) was higher than that found in the national survey (4.4%). Finally, the higher visit rates to chiropractors, massage therapists, and naturopathic physicians in the western states (Washington and Arizona) than in the Northeast states (Connecticut and Massachusetts) paralleled reports that the highest use of CAM services is in the West.[1,2]

Because of the lack of national listings of licensed CAM providers and the resources to conduct surveys in all states, it was necessary to limit this study to two states per profession. An attempt was made to select states that were nationally representative of the profession and that were located in regions of the country where most licensed CAM providers are located. In addition, one northeastern and one western state were studied for each profession to enable examination of geographic diversity. The generally modest between-state differences in the characteristics of each type of CAM provider observed in this study and the similarities between the results of this study and those of a national chiropractic survey provide some reassurance that the findings might be generalizable to

other states. Because there is substantial variability among states in licensure, scope-of-practice laws, reimbursement, and presence of CAM training programs, however, the extent to which the findings are generalizable will not be known until other state or national studies are conducted.

The high response rates in all but one state ensure that the data provide reasonable estimates for each CAM profession in each state and compare favorably with the 52% response rate achieved for conventional physicians.[13] The relatively low participation rate for Arizona chiropractors (61%) was likely because state chiropractic leaders were preoccupied by an important state legislative session and less able than other CAM leaders to actively encourage colleagues to participate. CAM providers who did not respect the CAM leaders enlisted to encourage participation might have been less likely to respond despite the deliberate inclusion of leaders representing all major segments of each profession. Finally, the assumption that licensed CAM providers lacking verifiable telephone numbers were not practicing could have been incorrect and could have resulted in underestimates of the numbers of active CAM providers, although it seems unlikely that these providers would have had substantial patient volumes.

Conclusion

This study provides an overview of the characteristics of the CAM professionals who provide many of the popular complementary and alternative services in the United States. This information, in conjunction with that on visits to CAM providers summarized in a companion article,[12] will be helpful to decision makers engaged in discussions about how to best integrate CAM providers and services into the health care system.

We would like to express our thanks and appreciation to the following persons for their assistance with this project:
Washington State acupuncturists: Daniel Bensky, DO, James R. Blair, LAc, Hoy Ping Yee Chan, OMD, LAc, Amy Chen, OMD, LAc, Carol Conlon, LAc, Terry Courtney, LAc, O. Rachel Diaz, MSW, LAc, John Fenoli, MS, LAc, Pat Flood, MS, LAc, Tom Glynn, LAc, Chris Huson, MAc, LAc, Nam Hoon Kim, OMD, LAc, Hai Lan, LAc, Brenda Loew, MAc, LAc, Shou-Chun Ma, OMD, LAc, Barbara B. Mitchell, JD, LAc, Mark Nolting, ND, LAc, and Haifeng Wu, OMD, LAc.
Massachusetts acupuncturists: Martin Feldman, LAc, Ellen Highfield, LAc, Michael Hussin, LAc, DAc, Joseph Kay, LAc, Weidong Lu, LAc, James McCormick, LAc, William Mueller, Daniel Seita, JD, and Peter Valaskatgis, MAc, LAc.
Washington State massage therapists: Kathleen Appleyard, RN, LMP, Lucy Baker, LMP, Lori Bielinski, LMP, Greg Bolton, LMP, Nancy Emory, LMP, Barbara Grigsby, LMP, Jeri Hudson, LMP, John T. Jackson, LMP, CST, Lucy Krakowiak, LMP, Robert Regan-Hughes, LMP, Susan Rosen, LMP, Cheri Schell, LMP, Dawn Schmidt, LMP, Sari Spieler, LMP, Ann Marie Taylor, LMP, and Diana L. Thompson, LMP.
Connecticut massage therapists: Shirley Cooper, LMT, Linda Derick, Margo Gross, MS, OTR, LMT, Steve Kitts, Synthia Ramsby-Andrews, LMT, Maureen Stott, LMT, and Susan Taff, MPH, LMT.
Washington State naturopathic physicians: Carlo Calabrese, ND, MPH, and his staff, Michelle Gartley, Jane Guiltinan, ND, Sheila Quinn, Leanna Standish, PhD, ND, LAc, and Eileen Stretch, ND.
Connecticut naturopathic physicians: Enrico Liva, ND.
Arizona chiropractors: Jim Badge, DC, Robert Brook, DC, Nathan Conlee, DC, Arlan Fuhr, DC, Allen Gentry, DC, Kevin Gilbertson, DC, Terry Peterson, DC, Sally Quick, DC, Barry Rahn, DC, Kurt von Rice, DC, and Susan Wenberg, DC.
Massachusetts chiropractors: Joseph Boyle, DC, DABCN, FICC, Barry Freedman, MS, DC, Peter Hill, DC, Peter Hyatt, DC, Albert Kalter, DC ,Thomas Perrault, Sr, DC, and Anthony Rosner, DC, PhD.
Center for Health Studies staff: Dennis Bejin, Kristin Delaney, MPH, Virginia Dorgan, Sarah Greene, MPH, Kari Mae Hickman, Heidi Jantz, Jessica Smith, Rene Talenti-Perry, and Stephanie Wahab, PhD.
University of Washington team and others: Pat Brunzell, Donna Kalauokalani, MD, MPH, Laura Patton, MD, and Deborah Senn.
CAMRE team: Clifford Korn.

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Appendix: Description of Licensed CAM Professions Included in the Study

Acupuncture

The practice of acupuncture in the United States is currently regulated in 39 states and the District of Columbia (Mitchell, 2000). Two other states allow acupuncturists to practice by a ruling of the board of medical examiners, and legislation to regulate acupuncture has been introduced in another 5 states. Although practice requirements vary between states, all but 3 of the states regulating acupuncturists require passage of an examination given by the National Certification Commission for Acupuncture and Oriental Medicine that tests knowledge of acupuncture theory, acupuncture point location, and clean needle technique. Additional certification is available in Chinese herbology.

Currently there are 35 schools of acupuncture accredited by the Accreditation Commission of Acupuncture and Oriental Medicine, and 10 schools that are candidates for this accreditation. Those schools provide a minimum of 1,725 hours of training (705 hours of acupuncture-oriented theory, diagnosis, and treatment; 360 hours of biomedical clinical sciences; and 660 hours of clinical training) in a 3-year period. Students who study herbology as well must obtain an additional 450 hours of training in Oriental herbology (*Accreditation Handbook*, 1997) and attend school during a 4-year period. Although admission requirements vary between schools, all accredited schools require at least 2 years of college before matriculation. The degree received is normally a professional master's degree.

Acupuncture References

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Chiropractic

Chiropractic is the third largest learned health profession behind medicine and dentistry with nearly 60,000 practitioners in the United States and between 2,500 and 3,000 new practitioners entering the marketplace annually (Christensen et al, 2000; Cherkin and Mootz, 1997). The number of chiropractors is expected to reach 100,000 within the next two decades. States with the largest number of chiropractors include California, New York, Texas, Florida, and Pennsylvania (FCLB, 2000). There are currently 16 colleges in the United States and 2 in Canada. All are accredited (Chapman-Smith, 2000). A similar number of colleges exist outside North America, most affiliated with recognized universities. Programs comparable with US curricula are established in Australia, Denmark, New Zealand, South Africa, Denmark, and Japan (Chapman-Smith, 2000). Chiropractors are licensed in all US and Canadian jurisdictions and are regulated comparably in other nations throughout both hemispheres.

The program of study is 4 academic years (4,800 hours) with pre-matriculation requirements of 2 to 4 years of college. Most practicing chiropractors hold bachelors' degrees in addition to the Doctor of Chiropractic (DC), with numerous states requiring both for licensure (Christensen et al, 2000). A clinical internship is required during the fourth academic year. In addition to state and provincial licensure examination, national competency board examinations are required in basic sciences, clinical sciences, and clinical competencies, with most jurisdictions requiring practical examinations (Chapman-Smith, 2000). All jurisdictions require continuing education for re-licensure. There are a variety of postgraduate training and certification programs and residencies, which range from 400 hours to multiyear residencies. A small percentage of chiropractors obtain certification in subspecialties, such as clinical sciences, orthopaedics, neurology, radiology, or sports chiropractic.

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Massage Therapy

The field of massage therapy is changing rapidly in terms of both formal regulation and professional norms. The current standard of training for an entry level massage therapist is 500 hours of in-class supervised instruction, with at least 100 hours of that devoted to anatomy, physiology and pathology, and 200 hours

of instruction in technique. There are more than 800 massage training programs in the United States today, a minority of which do not meet the 500-hour standard. Many schools, however, offer more, and the standard in Canada is much higher (2,500 hours in Ontario and more than 3,000 hours in British Columbia). Although one can expect therapeutic massage training programs in the United States to expand in length in the coming years, the standards are likely to move away from being hours-based to becoming competency-based. Schools of massage can be accredited as vocational schools by the appropriate regional accrediting agencies. There is also a Commission on Massage Therapy Accreditation (COMTA), which gives a more substantive review. Thus far, however, relatively few schools have sought this recognition. It is expected more schools will seek such accreditation because the federal Department of Education recognized COMTA as an accrediting agency in 2002; thus, schools accredited by COMTA are eligible for federal benefits.

Individual practitioners of therapeutic massage can be licensed at the state or local level, or they can be nationally certified. Since 1992, the National Certification Board for Therapeutic Massage and Bodywork (NCB) has administered an entry-level paper-and-pencil competency examination. Eligibility to sit for the examination includes successful completion of a 500-hour training program or a comparable portfolio. One becomes nationally certified by qualifying to sit for the examination, passing the examination, and completing at least 50 hours of continuing education every 4 years.

To date, 26 states plus the District of Columbia have some form of statewide licensure for massage therapists. Most of these require 500 hours of training and passing the National Certification Examination (NCE). Although some states have their own examination, and some have none, the trend is toward use of the NCE. Both Connecticut and Washington, the states from which this sample of massage therapists was drawn, require 500 hours of training plus passing the NCE. The training received in massage schools is entry level, and regarded as the starting place for many practitioners. Training in advanced techniques or specialties can also require hundreds of hours of study. Most advanced training is offered through proprietary programs. Some of these offer certification in their techniques, but none of these certifications is accredited by any independent agency.

It is estimated that there are more than 100,000 massage therapists in the United States today. The principal professional organization, The American Massage Therapy Association, has more than 42,000 members. The Association of Bodywork and Massage Professionals (a private, for-profit professional association) has more than 25,000 members. Beyond these organizations, it is believed that most massage therapists do not belong to any professional association.

Massage Therapy References

American Massage Therapy Association, 820 Davis Street, Suite 100, Evanston, IL 60201-4444; telephone 847-864-0123, fax 847-864-1178, Web site: http://www.amatamassage.org

Associated Bodywork and Massage Professionals, 1271 Sugarbush Drive, Evergreen, CO 80439-7347; telephone 800-458-2267, fax 800-667-8260, Web site: http://www.abmp.com

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Massage Therapists Association of British Columbia; Web site: http://www.massagetherapy.bc.ca/

Touch Research Institute, University of Miami School of Medicine, POB 016820, Miami, FL 33101; telephone 305-243-6790, fax 305-243-6488, Web site http://www.miami.edu/touch-research/

Naturopathic Medicine

Naturopathic medicine is the third broadest scope of practice in North America after that of medical doctors and osteopathic physicians. There are four naturopathic colleges in the United States and one college in Canada. All naturopathic medical schools are either regionally accredited, professionally accredited, or are candidates for regional and professional accreditation. The profession is currently licensed in 11 states, Puerto Rico, and 4 of 11 Canadian provinces.

Admission requirements for any of the accredited or eligible-for-accreditation colleges includes 4 years of premedical education. Most students enter with a baccalaureate degree or higher. There are 4 years of naturopathic medical training and clinical sciences, including between 4,400 and 4,600 hours. Approximately one third of those hours are devoted to clinical training providing direct patient care. Patient care commences at the beginning of the third year and proceeds through to graduation.

Naturopathic physicians are required to complete more than 500 patient contact hours for graduation from Bastyr University, including 60 hours of preceptorships in private clinical practices. Southwest College of Naturopathic Medicine requires 1,000 hours of clinic rotations, and graduates are able to achieve licensure for acupuncture as well as naturopathic physician.

Postgraduate residencies in private practices are rapidly growing in naturopathic medical schools. Hospital residencies are not yet available. Naturopathic physicians are on staff at a few hospitals in the United States. Utah is the first state to require postgraduate residency training for licensure. The profession is supporting the creation of residency training opportunities by developing graduate medical education departments in naturopathic medical schools. The absence of federal funding continues to limit access to residency training for naturopathic physicians.

All naturopathic medical school graduates must complete the national naturopathic physicians licensing examinations (NPLEX) to gain licensure. NPLEX is also used in Canada.

Naturopathic Medicine References

American Association of Naturopathic Physicians, 8201 Greensboro Drive, #300, McLean, VA 22102; telephone 703-610-9037, Web site: http://www.naturopathic.org

Canadian Naturopathic Association, 1255 Sheppard Avenue East (at Leslie), North York, Ontario, M2K 1E2; telephone 416-496-8633, Web site: http://www.naturopathicassoc.ca

Bastyr University, 14500 Juanita Drive NE, Kenmore, WA 98028-4966; telephone 425-823-1300, fax 425-823-6222, Web site: http://www.bastyr.edu

National College of Naturopathic Medicine, 049 SW Porter, Portland, OR 97201; telephone 503-499-4343, fax 503-499-0027, Web site: http://www.ncnm.edu

Southwest College of Naturopathic Medicine and Health Sciences, 2140 E. Broadway Road, Tempe, AZ 85282; telephone 480-858-9100, fax 480-858-9116, Web site: http://www.scnm.edu

University of Bridgeport College of Naturopathic Medicine, 60 Lafayette Street, Bridgeport, CT 06601-2449; telephone 603-576-4108, Web site: http://www.bridgeport.edu/naturopathy