RESEARCH ARTICLES

Attitudes Towards Complementary and Alternative Medicine Among Pharmacy Faculty and Students

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Objectives. To determine pharmacy faculty members' and students' attitudes and perceptions regarding the use of complementary and alternative medicine (CAM).

Methods. A survey was used to obtain data on the following information concerning CAM: general attitudes, perceived barriers to use, training received and desired, personal use, and information sources used.

Results. In general, attitudes of pharmacy faculty members and students towards CAM were positive. Lack of evidence for CAM practices was considered the greatest barrier to the use of CAM by faculty members and students. Many CAM therapies were perceived to be effective. A high percentage of students desire more training in the areas of herbal medicine and nutritional supplements. Faculty members and students believe that CAM should be included in the curriculum.

Conclusions. General attitudes towards CAM are positive among pharmacy faculty members and students, and most believe that CAM should be taught in the pharmacy curriculum. More resources and training of faculty members may be necessary.

Keywords: complementary and alternative medicine, attitudes, students, faculty

INTRODUCTION

During the last 10 years, the use of various forms of integrative medicine by consumers has seen tremendous growth. Although nomenclature has continued to evolve, these alternative forms of healing have been collectively referred to as complementary and alternative medicine (CAM). Commensurate with the increase in consumer interest, the federal government has committed resources to study and address this area with the establishment of the National Institutes of Health (NIH) Center for Complementary and Alternative Medicine (NCCAM). The goal of this center is to "explore complementary and alternative healing practices in the context of rigorous science, training complementary and alternative medicine (CAM) researchers, and disseminating authoritative information to the public and professionals."¹

While consumer interest in CAM has continued to rise, mainstream schools of pharmacy, nursing, and medicine have been slow to embrace curriculum changes aimed at educating practitioners about alternative forms of healing. A number of factors may have contributed to the reluctance on the part of mainstream practitioners and

academicians to either include CAM approaches in their practice or educate new practitioners about various CAM approaches that are gaining wide acceptance by consumers. Many practitioners cite "lack of scientific evidence" as a concern, while others simply admit that they are unfamiliar with many of the CAM approaches that their patients are using.²

As practicing clinicians and academicians have struggled with determining the emerging role of alternative therapies, students in mainstream academic centers have also recognized both the growth in and need for education related to CAM.^{2,3}

Many schools of medicine and nursing have incorporated various components of CAM into their curricula, and schools of pharmacy are attempting to incorporate didactic coursework in their curricula related to CAM.³⁻⁷ In recent years, CAM education has improved in schools of pharmacy. Approximately 73%-86% of schools of pharmacy now offer some sort of CAM in the curriculum.^{6,7} However, they are primarily in elective courses, and generally focus on natural products rather than the full range of CAM-related practices.^{3,6,7} A very nice 5-part series on teaching evidence-based complementary and alternative medicine has been published, to which readers may want to refer.⁸⁻¹³

Since pharmacists are frequently cited as both accessible to patients and one of the most trusted healthcare

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professionals, patients routinely ask them for advice about a variety of CAM-related practices.^{14,15} For this reason, many believe that pharmacists must be better educated regarding CAM.^{14,15} Thus, determining pharmacists' attitudes and perceptions toward the use of CAM plays an important role in how curriculum change could be accomplished. As part of an NCCAM curriculum development grant, the University of Minnesota College of Pharmacy participated in a college-wide survey to assess attitudes of both faculty members and students related to CAM.² The goal of this study was to identify attitudes toward a full range of CAM practices so that strategies to adopt CAM-related curriculum change could be developed.

METHODS

Members of this NCCAM-funded curriculum development grant project created a 3-page survey instrument.² The study was reviewed and approved by the Committee for Protection of Human Subjects of the Institutional Review Board (IRB) at the University of Minnesota.

Faculty members and students at the University of Minnesota College of Pharmacy were invited to participate in the study. Faculty members from all departments who were directly involved in the teaching mission of the College of Pharmacy were included. Students were fourth-year doctor of pharmacy students who were less than a month away from graduation. Self-report survey instruments, along with a cover letter and consent forms, were distributed to participants. The faculty members were made aware of the survey in department meetings and survey instruments were placed in mailboxes. The faculty members were asked to complete and return survey instruments and e-mail follow-up was made within 2 weeks of survey distribution to encourage participation. Survey instruments were distributed to students during a mandatory final class meeting and completed survey instruments were collected prior to the end of the class meeting.

The survey instrument used a 6-point Likert rating scale on which 1 represented very strong agreement and 6 represented very strong disagreement. The demographic sections of the faculty member and student survey instruments were slightly different to reflect variations in practice and experience, but were otherwise identical. The survey instrument was developed to assess attitudes towards the most common CAM practices (acupuncture, aromatherapy, bioelectromagnetic therapies, biofeedback, chiropractic, herbal medicine, homeopathy, hypnosis/guided imagery, massage, music, nutritional supplements, prayer/spiritual healing, meditation, rolfing, and therapeutic/healing touch). Regarding these CAM therapies, the following were assessed: general atti-

tudes, perceived barriers, place in health care, perceived effectiveness, training received and desired, personal use, and information sources used.

For the summary of the data, descriptive statistics were used (eg, frequencies, standard deviations, means, minimums, maximums, and proportions). For the Likert responses, all responses with any degree of agreement were grouped together as positive responses, and all responses with any degree of disagreement were grouped together as negative responses. T tests and chi-square tests were used to analyze differences between faculty members and students, as appropriate. Results were considered to be significant when the *p* value was less than 0.05 (the alpha was set at 0.05). If there were missing data for a question, the percentages did not total 100% for that question. In order to retain the accuracy of the denominator, the percentages used included data missing for that question (all survey instruments considered valid were counted in the percentages). SPSS 6.1 was used for the analyses.

RESULTS

Survey response rates were 44% (31/70) for faculty members and 63% (63/100) for students. For faculty members, the mean age was 46 years (range 28-73 years) and the mean number of years on the faculty was 15 (range 1-40). For pharmacy students, the mean age was 27 years (range 23-37 years).

In general, attitudes of pharmacy faculty members and students towards CAM were positive (Table 1). A majority of faculty members and students indicated that CAM should be included in the curriculum (84% and 83%, respectively), that CAM knowledge is important to them (87% and 88%), and that health professionals should be able to advise their patients about common CAM methods (94% and 88%). Despite positive attitudes, 16% and 30% of faculty members and students, respectively, believed that the results of CAM were in most cases due to the placebo effect. Fifty-eight percent and 53% of the faculty members and students surveyed indicated a strong desire to see CAM therapies validated in a scientific manner.

Significant differences were seen between faculty members and students for the belief that CAM is a threat to public health (10% vs. 15%; *p* = 0.008). Faculty members and students also differed in their belief that CAM treatments had no true impact on the treatment of symptoms, conditions, and/or treatments (7% vs. 20%), but this was not statistically significant.

The perceived barriers to the use of CAM are summarized in Table 2. The greatest perceived barrier was the lack of scientific evidence for the practices (faculty, 90%;

Table 1. General Attitudes Towards Complementary and Alternative Medicine Among Faculty Members and Senior Students in a Doctor of Pharmacy Program

Statement	Faculty (% Agreed*)	Students (% Agreed*)	P
Clinical care should integrate the best of conventional and CAM practices.	94	85	0.095
CAM includes ideas and methods from which conventional medicine could benefit.	94	85	0.993
A number of CAM approaches hold promise for treatment of symptoms conditions and/or diseases.	94	80	0.383
The results of CAM are in most cases due to a placebo effect.	16	30	0.072
CAM therapies not tested in a scientific manner should be discouraged.	58	53	0.071
CAM treatments have no true impact on treatment of symptoms, conditions, and/or treatments.	7	20	0.109
CAM is a threat to public health.	10	15	0.008
I hope to have some CAM practices available to patients in my practice or network.	52	68	0.759
Health professionals should be able to advise their patients about commonly used CAM methods.	94	88	0.319
CAM practices should be included in my school's curriculum.	84	83	0.863
Knowledge about CAM is important to me as a faculty member/student.	87	88	0.597

*Percentages of agreed and strongly agreed responses were combined
CAM = complementary and alternative medicine

students, 85%). Other barriers that ranked highly were lack of reimbursement (68% and 75%, respectively) and lack of staff training (81% and 75%, respectively).

Significant differences between faculty members and students were seen for perceived barriers of CAM being too time consuming (19% vs. 28%; $p = 0.022$), and a lack of appropriate equipment (32% vs. 58%; $p = 0.009$). Perceived barriers that differed between faculty members and students but lacked significance were unavailability of credentialed providers (58% vs. 80%) and institutional concern about legal barriers (48% vs. 65%).

When comparing opinions about the place different CAM modalities have in healthcare, only chiropractic

was clearly considered mainstream with more than 50% of the faculty members and students agreeing that it is considered a mainstream practice in healthcare (74% and 53%, respectively; Table 3). Other categories perceived as mainstream were nutritional supplements (48% and 53%) and massage (45% and 38%). Interestingly, only 13% and 28% of faculty members and students considered herbal medicine to be mainstream. CAM modalities that more than 50% of both faculty members and students agreed were clearly alternative medicine were aromatherapy and bioelectromagnetic therapies. Significant differences of opinion were observed between faculty members and students regarding their perceptions

Table 2. Perceived Barriers to Use of Complementary and Alternative Medicine Reported by Faculty Members and Senior Students in a Doctor of Pharmacy Program

Statement	Faculty (% Agreed)	Students (% Agreed)	p
Lack of evidence for practices is a barrier to use.	90	85	0.753
Unavailability of credentialed providers is a barrier to use.	58	80	0.074
Lack of reimbursement is a barrier to use.	68	75	0.338
Too time consuming is a barrier to use.	19	28	0.022
Institutional concern about legal barriers is a barrier to use.	48	65	0.061
Lack of staff training is a barrier to use.	81	75	0.874
Lack of appropriate equipment is a barrier to use.	32	58	0.009

Table 3. Opinions Regarding Place in Health Care for Common Complementary and Alternative Medicine Therapies Among Faculty Members and Senior Students in a Doctor of Pharmacy Program

CAM Modality	Clearly Mainstream, %		Neither Clearly Mainstream or Alternative, %		Clearly Alternative, %		No Opinion, %	
	Faculty	Student	Faculty	Student	Faculty	Student	Faculty	Student
Acupuncture	29	18	36	30	36	33	0	13
Aromatherapy	3	5	23	15	68	60	7	31
Bioelectromagnetic therapies	0	13	19	15	74	53	7	13
Biofeedback*	48	18	26	25	26	33	0	18
Chiropractic	74	53	13	18	13	10	0	13
Herbal medicine	13	28	52	28	32	25	0	13
Homeopathy	0	10	13	25	84	43	3	15
Hypnosis/guided imagery*	29	13	32	25	36	38	3	18
Massage	45	38	26	20	29	18	0	18
Music	13	20	55	35	29	25	3	13
Nutritional supplements	48	53	45	23	7	5	0	13
Prayer/spiritual healing	23	33	42	35	32	10	3	15
Meditation*	23	8	42	30	29	30	7	25
Rolfing	0	5	7	3	55	35	36	50
Therapeutic/healing touch	7	8	19	18	71	48	3	20

*Significant difference ($p < 0.05$) between faculty and student perceptions
CAM = complementary and alternative medicine

that the CAM practices of biofeedback (48% vs. 18%; $p = 0.001$), hypnosis/guided imagery (29% vs. 13%; $p = 0.023$), and meditation (23% vs. 8%; $p = 0.01$) were mainstream.

CAM therapies that more than 50% of the faculty members identified as moderately or highly effective included acupuncture, biofeedback, chiropractic, herbal medicine, hypnosis/guided imagery, massage, nutritional supplements, and prayer/spiritual healing (Table 4). CAM therapies that more than 50% of the students thought were moderately or highly effective were acupuncture, chiropractic, herbal medicine, massage, nutritional supplements, and prayer/spiritual healing. Those therapies most frequently perceived by faculty members as being ineffective were aromatherapy (19%), bioelectromagnetic therapies (26%), and homeopathy (26%). In contrast, the percentage of students believing that a therapy was ineffective was less than 10% for all categories. The only area where the difference in perceived effectiveness was significant between faculty members and students was for chiropractic care ($p = 0.009$), which 90% of faculty members thought was moderately or highly effective compared with 63% of students.

A summary of the CAM training that faculty members and students had received and future training they desired is presented in Table 5. Surprisingly, only about half of faculty members and a third of students were likely to have received training sufficient to personally provide or advise patients in herbal medicine (55% and 36%, respectively) and nutritional supplements (46% and 36%). The lack of CAM training in colleges of pharmacy is further evidenced by an average of 67 % of faculty members (range 13%-97%) and 67% of students (range 13%-85%) reporting no CAM training in all listed modalities. The only significant difference between faculty members and students in this area was in the percentage who had received training in chiropractic care (33% vs. 10%; $p = 0.026$).

The desire for further training was highest for herbal medicines (78% of faculty members and 73% of students) and nutritional supplements (75% and 63%). For the other categories, the desire for further training was less than 65% among both faculty members and students. Overall, 48% of faculty members and 47% of students indicated that they did not desire further training.

Table 4. Perceived Effectiveness of Complementary and Alternative Medicine Among Faculty Members and Senior Students in a Doctor of Pharmacy Program

CAM Modality	Highly Effective, %		Moderately Effective, %		Seldom Effective, %		Not Effective, %		Harmful, %		No Opinion, %	
	F	S	F	S	F	S	F	S	F	S	F	S
Acupuncture	23	20	55	43	10	10	0	0	0	0	13	15
Aromatherapy	0	5	13	30	29	20	19	8	0	0	39	25
Bioelectromagnetic	0	8	7	18	36	33	26	5	0	0	32	25
Biofeedback	16	15	58	28	7	13	0	0	0	0	19	33
Chiropractic*	29	25	61	38	10	3	0	0	0	0	0	23
Herbal medicine	10	5	68	60	7	8	10	0	3	0	3	15
Homeopathy	3	5	19	18	23	30	26	3	7	0	23	33
Hypnosis/guided imagery	13	5	45	25	13	18	7	5	0	0	23	35
Massage	19	33	48	25	26	5	3	0	0	0	3	25
Music	7	15	32	33	29	10	3	0	0	0	29	30
Nutritional supplements	26	23	48	45	23	5	0	0	0	0	3	15
Prayer/spiritual healing	16	30	42	28	23	10	0	3	0	0	19	18
Meditation	13	15	32	23	32	13	0	0	0	0	23	38
Rolfing	0	3	7	8	7	15	3	0	10	0	71	60
Therapeutic/Healing touch	0	8	23	18	23	18	10	8	3	0	42	38

F = faculty; S = student

*Significant difference ($p < 0.05$) between faculty and student perceptions

Table 6 summarizes personal use of CAM by faculty members and students. The CAM modalities with the highest percentage of positive outcomes experienced were chiropractic (26% for faculty members and 18% for students), herbal medicine (29% and 20%), massage (39% and 38%), nutritional supplements (32% and 35%), and prayer/spiritual healing (39% and 25%). Fairly high percentages of faculty members and students would consider using almost all CAM modalities (faculty members average, 45%, range 26%-68%; student average, 43%, range 30%-53%). Faculty members and students were most likely not to consider using bioelectromagnetic therapies (58% and 50%), homeopathy (61% and 43%), and rolfing (68% and 50%). The only significant difference between faculty members and students for personal use of CAM was for meditation. More faculty members than students would consider using meditation (61% vs. 48%) and more have used it with positive outcomes (19% vs. 5%) ($p = 0.037$).

Currently, pharmacy faculty members and students use a variety of sources to obtain information about CAM (Table 7). The sources most commonly used are pharmacy and other professional journals (90% and 70%, respectively) and peer professionals (87% and 65%). Other healthcare professionals, mass media, and the Internet were also ranked highly. Coursework or formal training was used by only 32% of faculty members and 38% of

students. There was no significant difference in the information sources used by faculty members and students.

DISCUSSION

This study suggests that students and faculty members consider it important for CAM to be included in the curriculum. They also agree that clinical care should integrate conventional and CAM practices and that CAM has methods from which conventional medicine could benefit. The small percentage that believe that CAM modalities have no true impact on the treatment of conditions or symptoms or that the results are due to placebo effect could be due to lack of information about current CAM evidence-based research. Students as well as faculty members agreed that any testing should be carried out in a scientific manner. Unfortunately, this study also showed that some faculty members and students still believe that CAM has a potential to harm. Nevertheless, a majority of faculty members and students believed that health professionals should be able to advise their patients about commonly used CAM methods. To do this successfully, knowledge about CAM practices should be included in the pharmacy curriculum. Both faculty members and students believe that lack of training is a potential barrier to use of CAM. In addition, they believe that the greatest barrier is the lack of scientific evidence. Therefore, training is needed in these areas, and curricula

Table 5. Percentages of Faculty Members and Students Who Had Received and/or Desired Training in Complementary and Alternative Medicine

CAM Modality	Faculty Members		Students		Faculty Members		Students	
	Had Received No Training	Desired No Training	Had Received No Training	Desired No Training	Had Received Some Training	Desired Some Training	Had Received Some Training	Desired Some Training
Acupuncture	81	48	75	45	20	52	13	41
Aromatherapy	81	48	80	43	19	38	8	40
Bioelectromagnetic therapies	90	55	75	40	10	45	13	43
Biofeedback	65	45	65	50	36	49	20	38
Chiropractic*	68	45	78	43	33	55	10	46
Herbal medicine	19	19	13	15	81	78	76	73
Homeopathy	52	36	68	40	48	65	21	48
Hypnosis/guided imagery	68	55	80	63	32	46	8	26
Massage	71	52	78	48	29	49	10	41
Music	77	61	83	50	22	39	6	38
Nutritional supplements	13	23	18	25	88	75	71	63
Prayer/spiritual healing	68	52	80	58	32	48	8	31
Meditation	77	55	83	58	23	45	5	29
Rolfing	97	65	85	60	3	35	3	26
Therapeutic/healing touch	81	58	43	60	19	41	40	22
Average	67	48	67	47	33	51	21	40

*Significant difference ($p < 0.05$) between faculty and student perceptions

in colleges and schools of pharmacy should include this information. The training should include the evidence that is available. This would help faculty members and students to better advise their patients and to be more involved with other practitioners.

When considering whether CAM treatments were “mainstream” or “alternative” treatments, chiropractic care was ranked as mainstream by more faculty members and students than any other CAM practice. This could be due to health professionals being more familiar with chiropractic care as it has rapidly gained acceptance within the health care system and is routinely reimbursed by government and third party programs. Use of nutritional supplements was also considered “mainstream.” Given the number of people who are currently using nutritional supplements as part of their health care, this was not surprising. More faculty members than students rated biofeedback as mainstream (48% vs 18%). This may be because faculty members are more familiar with this therapy and are aware that it is used in clinical practice.

The majority of faculty members and students perceived herbal medicine and nutritional supplements as highly effective or moderately effective. These findings could be due to a greater familiarity with these 2 topics than any of the others. Conversely, the very small percentage of faculty members and students who perceived rolfing as moderately or highly effective (7% and 11%, respectively) may have been due to their lack of familiarity with this treatment.

The training of health practitioners in CAM is a rapidly evolving area. However, due to the nature of pharmacy practice, many CAM modalities are not included in the training or curriculum. When study participants were asked to express their desire for training or further training in the use of a treatment, herbals and nutritional supplements received the highest percentage of positive responses. This indicates that more CAM content needs to be included in the education of pharmacists. The results of this study could lead the efforts of the College during their evaluation of the curriculum using these

Table 6. Personal Use of Complementary and Alternative Medicine Therapies Reported by Faculty Members and Senior Students in a Doctor of Pharmacy Program

	Would NOT Consider Using, %		Would Consider Using, %		Used With Positive Outcomes, %		Used With Neutral/Negative Outcomes, %	
	F	S	F	S	F	S	F	S
Accupuncture	19	30	68	53	3	3	7	0
Aromatherapy	42	25	42	50	7	10	3	3
Bioelectromagnetic therapies	58	50	39	30	0	5	0	0
Biofeedback	19	28	68	45	7	5	3	5
Chiropractic	16	25	42	43	26	18	10	0
Herbal medicine	19	15	29	48	29	20	19	5
Homeopathy	61	43	26	43	3	0	3	0
Hypnosis/Guided imagery	36	43	55	35	7	3	0	0
Massage	19	8	36	43	39	38	3	0
Music	19	15	55	53	13	13	7	0
Nutritional supplements	16	8	29	35	32	35	16	5
Prayer/Spiritual healing	23	23	32	38	39	25	7	3
Meditation*	19	33	61	48	19	5	0	0
Rolfing	68	50	26	30	0	0	0	3
Therapeutic/Healing touch	48	43	42	38	3	3	3	3

F = Faculty, S = Students

*Significant difference ($p < 0.05$) between faculty and student perceptions

areas of interest from the perspective of faculty members and students.

Regarding personal use of CAM, both faculty members and students were open-minded about using different CAM modalities. Several CAM therapies had been used personally by the respondents with positive outcomes. This is important because personal beliefs or dis-

beliefs in a therapy may affect a health professional's advice to a patient, especially concerning CAM. For those therapies that faculty members and students would not consider, further education in these areas may affect their beliefs. They may not know enough about the therapy to use it.

This study also showed that coursework or formal training is the source of CAM information for only a small percentage of faculty members and students. This confirms that a majority of students feel that they are currently not obtaining CAM information from their coursework and the need for increased education on CAM therapies in the curriculum.

However, faculty members in colleges of pharmacy still may not feel comfortable with some content areas in CAM. The faculty members need to be well prepared to teach these topics. Perhaps if resources and training were made available to faculty members in schools of pharmacy, CAM could be more easily incorporated into the curriculum.

CONCLUSION

This study revealed that faculty members and students at the University of Minnesota College of Pharmacy acknowledge that CAM therapies can be beneficial and should be taught in the curriculum.

Table 7. Sources of Information About Complementary and Alternative Medicine Used by Faculty Members and Senior Students in a Doctor of Pharmacy Program

Source	Faculty, %*	Students, %
Peer professionals	87	65
Other healthcare providers	42	55
Pharmacy, medical, nursing or other professional journals	90	70
Mass media (TV, newspapers, magazines, radio)	55	33
Internet web sites list-serve)	39	48
Coursework or formal training	32	38
Referral	10	15
Apprentice with healers	3	8

*None of the differences between faculty and students were significantly different

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