

Natural Product and CAM Education in U.S. Pharmacy Schools: Comparison and Results of Two National Surveys

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ABSTRACT. Two independent surveys of U.S. pharmacy schools were performed in the spring of 2002 to assess the extent to which the topics of natural products and complementary/alternative medicine had been incorporated into curricula. Each survey was administered independently and by different modes. Similar items from the surveys were used to validate the individual results, while dissimilar items provided a com-

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prehensive view of the state of complementary/alternative and natural product instruction in U.S. schools. The 2 surveys obtained responses from 72 schools and 64 schools, respectively. A comparison of the two surveys' results indicated that most schools (80% vs. 73%) offered some form of instruction on the topics of natural products and complementary/alternative medicine, with the vast majority (70% vs. 69%) of instruction occurring in an elective setting. Results indicated that institutions do not currently separate natural products instruction from other topics in complementary/alternative medicine and that while greater numbers of schools are offering instruction in these topics than at the time of previous surveys, these topics are still not universally addressed. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2004 by The Haworth Press, Inc. All rights reserved.]

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INTRODUCTION

The terms complementary and alternative medicine (CAM) encompass a wide range of healing modalities defined generally by the National Center for Complementary and Alternative Medicine of the National Institutes of Health as "a group of widely diverse medical systems, treatments and products that are not presently considered a part of conventional medicine" (1). This umbrella term includes treatments and practices broadly classified into five categories: alternative medical systems, mind-body interventions, manipulative methods, energy therapies, and biologically based therapies (1). Biologically based therapies have also been termed herbal medicine, dietary supplements, and natural products (herbs or other botanical medicines, mega-dose vitamins, minerals, amino acids, hormones, fatty acids, and other chemical supplements taken for therapeutic or preventive purposes). The range of practices encompassed by the term CAM and the differences in nomenclature and definitions often complicate efforts to study these treatments and practices.

Irrespective of what these treatments are called, the U.S. population continues to embrace their use at a rapid rate (2). The extent and completeness of this trend initially caught many health care educators unaware. Since the time these nationwide increases in patient use of CAM were first identified, the health care education community as a whole has made efforts to change cur-

riculum offerings to provide students with training about these treatment modalities (3). The number of medical schools offering instruction in CAM treatments nearly doubled, from 34% of respondents in 1995 to 64% of respondents in 1997-1998, and this trend has not reversed (4-6).

Pharmacy educators have also recognized that patient use of CAM has a large impact on provision of patient care services; therefore, they have expended significant effort to provide appropriate educational opportunities (7). The extent and methods by which these educational experiences have been incorporated into existing curricula have been assessed multiple times in the late 1990s. In a survey performed in 1996, 74% (57) of responding schools of pharmacy reported addressing the concept of herbal medicine in course work (8). A 1998 survey of schools of pharmacy, focused on CAM education, reported that 72% (36) of respondents offered CAM course work (9). One year later, a publication by the American Association of Colleges of Pharmacy surveying alternative therapy education indicated that only 29 schools offered course work on these topics (10).

The reasons for these large discrepancies between surveys are unclear. The variation in definitions of CAM, different emphases of survey contents (CAM vs. herbal medicine vs. alternative medicine), and various survey methodologies employed could each have contributed to the range of results among surveys. Because these previous surveys were not conducted at the same time, it is impossible to determine whether the variation in response is a function of the terminology/methodology used or an accurate reflection of curricular changes. However, a comparison of two independently conducted studies with slightly different foci, performed during the same time frame, would offer a more complete and accurate picture of how CAM and natural product education are currently being performed in schools of pharmacy. The purpose of this paper is to provide current data on CAM and natural product instruction for use by institutions in developing course work in these areas.

METHODS

Two independent surveys were conducted to assess the state of CAM and natural product education in schools of pharmacy across the U.S. Each survey used different terminology: Survey A was specifically designed to elicit information on natural products education, while Survey B was intended to collect data on the state of CAM education. Both surveys were designed and administered independently by researchers at their respective institutions. Both surveys collected data between April and June of 2002, so both should represent the same curricula. The two surveys differed in terms of mode of administra-

tion and the content of some questions. The results section reports key findings of the individual surveys and provides a comparison of the items that were common/similar to both surveys.

Survey Instrument A, an 18-item survey, collected information regarding course content/design, faculty demographics, and institutional information (see Appendix). Data was collected via telephone survey of each of the 81 American Association of Colleges of Pharmacy (AACP) accredited schools of pharmacy in the U.S. Calls were made to the dean's office of each school, and the interviewer was directed to a faculty member with expertise in the area of natural products. The interviewer contacted the faculty member identified by the dean's office and administered the survey to that person. If the person was not immediately available, a message was left that requested a return call to discuss a course that the faculty member taught. After three separate messages with no response, the institution was considered a nonresponder. Descriptive statistics (mean, median) were used to portray the data.

Survey Instrument B assessed the frequency and nature of CAM instruction at U.S. pharmacy schools (see Appendix). A 13-item survey was developed through an iterative process with input from faculty members and practicing/academic pharmacists specializing in CAM. After a pilot test in ten respondents, the survey was mailed via U.S. Postal Service to all schools of pharmacy in the U.S. The surveys were addressed to academic or curriculum deans at each of the 85 pharmacy schools (including schools that are in the process of receiving AACP accreditation). The survey specifically elicited responses about existing instruction in complementary and alternative medicine and the administrative and educational characteristics of such courses. Descriptive statistics (mean, median) were used to portray the data.

RESULTS

Key results of each survey and comparative data are reported below. The individual survey results have also been presented separately at national meetings and/or submitted as manuscripts (11, 12).

Survey A

Responses were obtained from 72 schools (89%); however, data from 8 schools could not be used. The final results represented 64 (79%) of the schools of pharmacy in the U.S. This survey identified 13 schools that did not address the topic of natural products in their curricula. Of the 51 schools that did offer some form of natural products course, 17 (33%) offered a course ad-

teaching natural products exclusively and 23 (45%) offered a course focusing on natural products and other CAM therapies, resulting in 40 (78%) schools offering a course focused on natural product topics. The remaining 11 (22%) schools offered lectures on this topic distributed among other courses, including nonprescription products, pharmacology, and therapeutics. Thirty-five schools (69%) offered natural products instruction as an elective course, while five schools required students to take a course focusing on natural products or CAM.

The courses focusing on natural products or CAM averaged 2.6 credit hours (range: 2-5 hours, median = 2.0) and enrolled an average of 56 students (range 10-200, median = 45). The CAM courses ($n = 23$) covered a variety of alternative therapies, but the greatest focus (78.5%; CI: 70.59-86.31) was on natural products.

The natural products courses and lectures were taught mostly by instructors holding a Ph.D. (49%), followed closely by those holding a Pharm.D. degree (43%). The majority of instructors (70.6%) did not maintain a clinical practice setting. Clinical rotations allowing additional exposure to CAM/natural products were offered at 12 (23.5%) of the institutions offering CAM/natural products education. This total includes two responding schools that did not offer a CAM/natural products focused course. Most of these rotations were elective rotations in an integrated medicine clinic or an ambulatory care site with a large patient population that used CAM therapies.

Survey B

A total of 64 schools out of 85 schools returned the completed surveys for a response rate of 75%. Among the schools of pharmacy responding to the survey, 47 (73%) offered some type of CAM education. The predominant (70%) form of instruction for CAM courses was as electives, while six (13%) schools taught CAM as part of a required course. Approximately eight (17%) schools taught CAM as an independent course. On average, schools of pharmacy that offer/teach CAM (in any of the forementioned formats) have been offering CAM courses for four years, with the median number of years being three. Schools with course offerings in CAM (in any format) devoted an average of 2.4 credit hours (range: 1-5 hours, median = 2) to CAM instruction, and the mean number of students enrolled in these courses was 58 (range 6-170, median = 45). Lectures (65%) appeared to be the most preferred form of instruction, followed by group discussions (22%) and case studies (13%). Thirty-six percent of the schools used a combination of all three teaching strategies.

Examinations were the primary form of assessment used by most schools (94%) for the CAM courses. Other academic requirements for CAM courses

in some of the schools included reading assignments (59%), paper critiques (50%), and presentations (46%). The CAM lectures were taught by instructors holding a Ph.D. degree (34%), followed closely by those holding a Pharm.D. degree (26%). Approximately 5% of the instructors had a bachelor's degree in pharmacy, while the remaining 35% reported having some other degree. Sixty-seven percent of faculty members teaching CAM courses in various schools of pharmacy reported having taken special training in CAM to help them prepare for their course. The type and nature of training undertaken by these instructors were not elicited in the survey.

The following content areas were delineated as being taught or discussed in the CAM courses among the surveyed schools: acupuncture, biofeedback, chiropractor, homeopathy, hypnosis, massage therapy, megavitamins, herbal therapy, relaxation techniques, spiritual healing, therapeutic touch, Chinese medicine, and Ayurveda. Table 1 delineates the percentage of schools that reported teaching each content area. In addition to the above-mentioned content areas, the following esoteric topics were also discussed under CAM curricula by a few schools: dietary supplements, yoga, guided imagery, progressive relaxation, feldenkrais, reflexology, prayer, magnet therapy, botanical supplements, African folk medicine, Native American folk medicine, Tai Chi, and Shiatsu.

TABLE 1. Topical Areas Covered Under CAM: Survey B.

Content Area	Number of Schools Offering Each Content Area (%)
Acupuncture	25 (54.3)
Biofeedback	11 (23.9)
Chiropractor	16 (34.8)
Homeopathy	33 (71.7)
Ayurveda	18 (39.1)
Massage	16 (34.8)
Hypnosis	10 (21.7)
Megavitamins	26 (56.5)
Herbals	45 (97.8)
Relaxation Techniques	12 (26.1)
Spiritual Healing	11 (23.9)
Therapeutic Touch	8 (17.4)
Chinese Herbal	27 (57.8)
Other*	7 (15.2)

*Other includes topical areas mentioned in the body that are taught/discussed at very few schools.

Comparisons

The following items were elicited by both surveys: whether a course (natural product and/or CAM) was offered at the institution, the format of the course (whether elective, independent, or part of another course), enrollment number, credit hours taught, level of education of the instructor, and name/title of the course. Table 2 delineates the items that were similar in both surveys (see Appendix for complete description of survey items).

Survey A indicated that out of the 64 schools whose data were considered, 51 (80%) offered some form of natural product and CAM instruction, with 40 (63%) schools offering courses focused primarily on natural products. Survey B reported 46 (73%) schools out of a total of 64 respondents to offer some form of CAM education. This difference is probably due to the lower overall response rate of Survey B (75%) as compared to Survey A (89%). It may also be possible that Survey B did not get responses from certain schools that did have some form of CAM education.

Both surveys noted that CAM and/or natural product courses were predominantly taught as an elective (Survey A: 69%; Survey B: 70%). The mean enrollment for CAM/natural product courses was 56 (range 10-200) according to Survey A. Survey B reported an average student enrollment in CAM/natural product specific courses of 58 with a range of 6 to 170 students. The number of credit hours devoted to CAM/natural product instruction was also similar as reported by the surveys. Survey A reported a mean of 2.6 credit hours (range 2-5, median = 2), while Survey B reported a mean of 2.4 (range 1-5, median = 2). A *t* test was performed to compare the two surveys with regard to the aver-

TABLE 2. Comparison of Similar Item Responses from Surveys A and B.

Similar Items*	Survey A (Telephone) N = 72 Useable = 64	Survey B (Postal Mail) N = 64
Response rate	89%	75%
Is a course on CAM/natural products offered at your school?	80%	73%
Schools offering the course as an elective	69%	70%
Mean enrollment/year	56	58
Mean credit hours	2.6	2.4
Advanced degree of instructor (Ph.D./Pharm.D./other advanced degree)	92%	95%

*Please see Appendix for a complete description of actual survey items.

age credit hours and the mean enrollment of students. No significant differences were noted between the two surveys' results.

With regard to the education level of the instructors, both surveys reported doctor of philosophy as the predominant terminal degree of instructors (Survey A = 49%; Survey B = 35%), followed by the Pharm.D. (Survey A = 43%; Survey B = 26%), and B.S. in Pharmacy (Survey A = 4%; Survey B = 4.4%). The differences between the survey results were probably due to the difference in response rate for the two surveys. The names and/or titles used to designate the course varied from school to school with "Complementary and Alternative Medicine" being the most common designation.

DISCUSSION

The two surveys differed primarily in terms of their modus operandi. Survey A was a telephone survey, while Survey B was administered via the U.S. postal system. This may account for the difference in response rates for the two surveys (89% compared to 75%), in that slightly higher response rates would be anticipated for an interviewer-directed survey than for a self-administered survey (13).

The other important difference in these two surveys was their focus on the content, hence the use of different terminologies to adequately define the content area. Survey A was intended to gather data on the state of natural product education, while Survey B elicited responses for complementary and alternative medicine instruction which included the area of natural products. As mentioned earlier, the variety in the terminology used to report education endeavors in this area has made direct comparisons between previous surveys difficult. However, for the items that were common or similar (in terms of wording used or focus) to both of these surveys, the authors did not find a significant difference (*t* test) in the responses. This lends support to this picture of the current state of CAM/natural product education in U.S. schools of pharmacy as obtained from the individual surveys. Based on similarities of the survey results, it appears that most schools of pharmacy do not make a clear distinction between education offered in the area of natural products and that of other CAM modalities. This indicates that the variations in results of earlier studies were probably due more to response rate and methodology differences than the fact that different terminology was used.

The comparison of the survey results allows a more complete picture of the state of CAM and natural product education in U.S. schools of pharmacy than would be provided by only one survey. This more comprehensive review is especially important in light of the increases in school of pharmacy course offer-

ings regarding these topics, as both survey results indicate that the number of schools offering CAM/natural product courses has increased since previously reported surveys (8-10). The findings of these surveys may also serve to guide faculty in the development or modification of courses instructing in these topic areas. While several publications have described specific courses that have been implemented to teach CAM/natural products, the lack of a general overview of national offerings has been noted by educators (14-18).

In some institutions, CAM/natural product course offerings may be a direct function of instructor training and experience. This supposition is reinforced by survey findings indicating a positive trend between instructor training and the range of CAM course offerings, as well as between lengths of time a course has been offered and course enrollment. While not statistically significant, these trends may nonetheless have ramifications for institutions with faculty lacking additional training in the area of CAM/natural products, or with new faculty offering course work in this area. These trends may foreshadow a need for development of a standard list of course competencies to be addressed in CAM/natural product course work to assist those institutions lacking faculty with expertise in CAM to develop courses.

While the comprehensive review offered by these survey comparisons can serve as a reference point against which courses can gauge content, design, and educational methods, they also highlight the lack of consistency between institutional offerings. These inconsistencies are especially relevant as additional research in the study of CAM and natural product treatments emerges. As information becomes available regarding significant interactions between conventional medicines and CAM treatments, the provision of this information is changing from an additional service offered by some pharmacists to a basic clinical skill required for patient safety (19, 20). The lack of uniform coverage between institutions is a topic that will need to be addressed in the near future to adequately prepare all graduating pharmacists for entering contemporary pharmacy practice.

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NOTE

1. These topics were reported being taught by very few schools and are yet to be considered a part of mainstream CAM education; hence, they are not individually reported in the table.

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APPENDIX

Selected Items from Survey A

1. Does the school offer a course on Natural Products?*
- Yes
- No
- Other _____

Natural Products were defined as: herbs, botanical medicines, mega-dose vitamins, minerals, amino acids, hormones, fatty acids, and other chemical supplements taken for therapeutic or preventative purposes.

2. Is this course required? * _____
3. Number of students enrolled in course (at last offering)*: _____
4. How many credit/lecture hours is the course? *
- One
- Two
- Three
- Four or more
5. What percentage of the course deals specifically with NP, as opposed to other CAM?
- 0-25%
- 26-50%
- 51-75%
- >75%

CAM: Alternative systems of medical practice (Ayurveda, TCM), bioelectromagnetics, manual healing techniques (chiropractic, osteopathy, therapeutic touch), aromatherapy, homeopathy, naturopathy, etc.

6. Degree held by instructor*:
- Ph.D.
- Pharm.D.
- R.Ph.
- D.O.
- Other _____

Selected Items from Survey B

1. Do you offer any alternative, complementary and natural Medicines (CAM) courses at your institution?*
- Yes No
2. What is the format of CAM instruction offered at your institution?*
- (Check all that apply)
- Elective Required Independent Within another course Other: _____

APPENDIX (continued)

3. How long has the CAM course been offered? (Please provide month/year): _____

4. How many credit hours of instruction per week does this course offer?*

None One Two Three Four More than 4

5. What is the predominant teaching method offered in the CAM course?

Lecture Cases Discussions Other: _____

6. How many students are enrolled in the course?* _____

7. What are the academic requirements for the CAM course?

(Check all that apply)

Reading Paper Examination Presentation Other: _____

8. What is the highest level of education of the faculty who teach the CAM course?*

Ph.D. Pharm.D. B.S. in Pharmacy Other: _____

9. Have the faculty who teach the CAM course taken any special training in this area?

Yes No

If yes, please specify: _____

10. Which of the following content areas does the CAM course cover?

(Check all that apply)

Acupuncture

Biofeedback

Chiropractor

Homeopathy

Hypnosis

Massage

Megavitamins

Herbals

Relaxation techniques

Spiritual healing

Therapeutic touch

Chinese herbal medicine

Ayurveda

Other: _____

11. Do you offer more than one of such courses? Yes No

If you answered YES, please indicate information from above for the course.

*Indicates items that are similar to both surveys