



Contents lists available at ScienceDirect

## Currents in Pharmacy Teaching and Learning

journal homepage: [www.elsevier.com/locate/cptl](http://www.elsevier.com/locate/cptl)

## Research Article

## Complementary and alternative medicine education in U.S. schools and colleges of pharmacy

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## ARTICLE INFO

## Keywords:

Complementary medicine  
Alternative medicine  
Integrative medicine  
Natural products  
Self-care  
Curriculum

## ABSTRACT

**Introduction:** The objective of this survey is to provide an update on the state of complementary and alternative medicine (CAM) education and describe instructional and assessment methods across schools and colleges of pharmacy.

**Methods:** One hundred thirty-five schools of pharmacy were contacted to participate in a survey describing the incorporation of CAM education into their respective curricula. The survey also inquired about perceived barriers and future plans for CAM-related courses.

**Results:** Ninety-six schools responded to the survey (71.1%), with all schools reporting that CAM is incorporated into the curriculum. Topics covered, teaching strategies, and assessment methods varied among the 74 elective and 116 required courses described. Respondents listed lack of evidence to support CAM use as the most common barrier to CAM education, and 50% of respondents reported plans for expansion of CAM education at their schools.

**Conclusions:** CAM education in pharmacy curricula has grown over the last decade, but remains varied in topics taught and teaching methods.

## Introduction

The use of health care practices outside of conventional medicine has become increasingly prevalent in the United States. These practices are commonly known as complementary and alternative medicine (CAM). The term “complementary” is used to describe the use of these practices alongside conventional practice, while “alternative” implies the use of these practices in place of conventional medicine. Because most patients use a complementary approach, the more modern term “integrative medicine” has been adopted to encourage the coordination of conventional and complementary practices.<sup>1</sup> However, most institutions, including accreditation bodies, still maintain the term CAM. Natural products are considered categories under the umbrella term of CAM and include dietary supplements like herbal products, vitamins, minerals, and probiotics. In 2012, 33.2% of adults reported utilizing complementary health approaches.<sup>2</sup> There are a number of factors contributing to the widespread use of CAM, including increased availability, exposure to cultures that use CAM, renewed interest in environmentalism, the belief that CAM is safer and less expensive, and a realization that many factors other than conventional medicine alone contribute to health and well-being.<sup>3</sup>

Pharmacists are well situated to provide counseling on these treatment modalities because of their accessibility to patients and to CAM products. Additionally, patients expect that pharmacists can provide safety information and recommendations for CAM products.<sup>4,5</sup> However, pharmacists have generally felt unprepared to provide counseling in this area.<sup>6–10</sup>

Recognizing this educational gap, the Accreditation Council for Pharmacy Education accreditation standards lists “Natural Products and Alternative and Complementary Therapies” as a required element of didactic training.<sup>11</sup> The North American

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<http://dx.doi.org/10.1016/j.cptl.2017.03.009>

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Pharmacist Licensure Examination (NAPLEX) lists consideration of dietary supplements and complementary and alternative medicine as an expected competency.<sup>12</sup> Pharmacy students and faculty alike have also called for more education in CAM.<sup>13-18</sup>

As a result of growing interest and recognition of this knowledge gap, there have been several publications describing the addition of CAM instruction in pharmacy schools.<sup>14,19-26</sup> While most reported improvement in knowledge, skills, and attitudes after implementation of these courses, they differed in the delivery methods, topics discussed, whether CAM or natural products was the focus, whether they were elective or required courses, and whether CAM topics were the primary focus of the course or were incorporated within an existing course. In 2002, among 63 responding schools of pharmacy, 73% reported offering CAM education<sup>27</sup> while in 2003, 80% of 64 responding schools of pharmacy reported teaching some form of CAM and/or natural products education.<sup>28</sup> This study attempts to provide an update on the extent that CAM education is incorporated into pharmacy curricula in the United States and the perceived barriers to CAM education, while providing more details about instructional methods as compared to previous studies.

## Methods

The study was given exemption status by the Institutional Review Board of the University of the Sciences. In August 2015, the study investigators distributed an email describing the study to the department of pharmacy practice chair for each of the 135 schools of pharmacy listed in the American Association of Colleges of Pharmacy roster. Each chair was requested to forward the survey to the faculty member they deemed most appropriate to answer a survey concerning CAM education in the pharmacy curriculum. The survey description encouraged the completion of the survey even if CAM education was not included in the curriculum. If there was no response within three weeks, the study investigators sent an email to a different department member from the school of pharmacy to respond to the survey.

The survey first asked if CAM was taught in the curriculum. If responders answered yes, they were asked to list the number of courses offered. For each course, the survey collected information on the following: (1) whether courses were required or elective, (2) topics covered in each course, (3) instructional and assessment methods, (4) number of credits and clock hours devoted, (5) class years of students permitted to take the course, (6) number of students in the course, (7) years of course existence, and (8) required texts. A list of CAM topics derived from the National Center for Complementary and Integrative Health<sup>1</sup> was provided to responders when they were asked to name topics covered in courses, but responders were also able to provide open-ended responses if topics taught were not listed. Responders were given the option to either upload pertinent syllabi or answer survey questions. A second portion of the survey asked about perceived barriers to CAM education and if there were plans for future implementation of CAM courses. Survey responses were collected online through Qualtrics® software.

## Results

Of 135 schools and colleges of pharmacy contacted, 96 (71.1%) responded to the survey. One college of pharmacy declined to take the survey. All 96 respondents reported including CAM education in their current curriculum. A majority of schools and colleges reported offering both elective and required courses that taught CAM and/or natural products education (58.5%), while some schools reported only offering required courses (33.0%), and fewer only offered elective courses (8.5%). Demographic information of schools that responded to the survey is presented in [Table 1](#).

A total of 74 electives and 116 required courses were described. Characteristics of the courses are shown in [Table 2](#). The three most common topics covered in these courses were dietary supplements, herbal medicine, and diet-based therapy. Other topics most commonly discussed in courses were acupuncture, Ayurveda, and chiropractic care ([Table 3](#)). Of note, a majority of these classes only taught natural product topics, including dietary supplements, diet-based therapy, and herbal medicine (58%). Electives were more likely to cover topics other than natural products (57%) compared to required courses (30%).

The primary method of instruction was through lecture, and students were primarily assessed through quizzes and/or exams. Outside of lectures and exams, instructional and assessment methods varied widely between elective and required courses ([Table 4](#)). Most courses did not have a required textbook (57%). Of those that did require a textbook, the most popular were the *Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care and Pharmacotherapy: a Pathophysiologic Approach*<sup>29</sup> ([Table 4](#)).

Of the 116 required courses described, a majority of the courses were therapeutics-based courses with CAM topics incorporated throughout, while only 17 of the required courses focused exclusively on CAM topics. For these 17 courses, the average number of credits was 2.4 and the average number of instructional hours per week was two. The most common topics taught were dietary supplements, herbal medicine, and homeopathy. Seven out of 17 of these courses had been in existence for less than five years. The students were mostly taught through lecture and assessed through quizzes and/or exams.

Eighty-six respondents commented on the perceived barriers to incorporating CAM education into their respective curricula ([Table 5](#)). Forty percent of schools stated they have not experienced any barriers. The most common barriers noted were lack of evidence supporting the use of CAM, lack of training for faculty, and lack of faculty interest. Eighty-four schools commented on future plans for incorporating CAM into the curriculum. There were no plans for new courses at 14 schools and colleges of pharmacy, while 28 respondents were uncertain of future plans. Forty-two respondents (50%) noted there were plans for future incorporation of CAM education at their schools/colleges, with plans for 21 new elective courses, 21 new required courses, and plans to incorporate CAM into 16 existing courses. Schools that have experienced barriers still reported a similar quantity of current CAM courses compared to schools that reported no barriers (2.1 vs 1.9 courses/school, respectively) and similar plans for new CAM courses (46% vs. 53%, respectively). Respondents were encouraged to provide open-ended responses if other perceived barriers were not listed on the

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