RESEARCH ARTICLES

Natural Product Education in Schools of Pharmacy in the United States

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Objective. The purpose of this study was to describe pharmacy school curriculum offerings in the areas of natural products and complementary/alternative medicine.

Methods. Eighty-one schools of pharmacy in the United States were surveyed to determine the extent to which coursework addressing natural product or complementary/alternative medicine had been incorporated into their curriculum.

Results. Usable responses were obtained from 64 schools (79 percent). Of these, 51 schools offered some exposure to these topics, while 40 offered courses exclusively on these topics. Most of these schools offered this instruction as an elective course focused primarily on natural products.

Conclusion. These results indicate that while the number of schools offering education in the areas of natural products or complementary/alternative medicine has increased, these topics are still not consistently covered in pharmacy school curricula.

Keywords: natural products, complimentary and alternative medicines, curriculum

INTRODUCTION

Health care practitioners are increasingly aware of continued growth in the number of patients using complementary and alternative medicines (CAM). One particular component of CAM, natural products (herbs, botanical medicines, mega-dose vitamins, minerals, amino acids, hormones, fatty acids, and other chemical supplements taken for therapeutic or preventative purposes), are of particular importance to pharmacists. The availability of these products in many pharmacy settings and the rapidly growing body of knowledge regarding the potential for significant interactions between drugs and natural products²,³ have led to the emergence of pharmacists as a “front line” for provision of information regarding the safety and efficacy of natural products. However, as patient use of natural products has continued to increase,⁴ there has not been a corresponding increase in formal education about this topic by schools of pharmacy. Consequently, many pharmacists complete their curriculum without an understanding of natural products or other CAM modalities. This discrepancy leads to a practice environment that can be frustrating for practitioners and patients alike.

In 1998, the Academic Affairs Committee of the American Association of Colleges of Pharmacy (AACP) recognized that this problem needed to be addressed, and issued a recommendation to incorporate complementary and alternative medicine into its Center for Advancement of Pharmaceutical Education (CAPE) educational outcomes.⁵ Since the issuance of these recommendations, there have been publications addressing proposed methods and considerations for implementing CAM education into pharmacy curricula.⁶ These publications have debated the merits of elective versus required courses to address CAM,⁷ appropriate topics for inclusion,⁸ and the need to incorporate only scientifically evaluated CAM modalities.⁹,¹⁰ While these papers have initiated many discussions in academic circles, there has been no clear consensus as to how these topics should best be incorporated into the educational process. Despite a lack of consensus, the need to
educate future pharmacists regarding natural products will not disappear but continue to escalate, a fact that has been reinforced by the increased number of pharmacy hours dedicated to counseling and educating patients and other health care professionals regarding these products.11

In 1997, a national survey of schools of pharmacy12 was performed to assess how “herbal medicine” was taught. This survey found that 57 schools (74%) of responding institutions offered at least some coursework addressing elements of herbal medicine, but only 7 of those schools offered a course devoted to herbal medicine. A second survey in 1998 that focused on CAM13 found that 36 respondents (72%) offered coursework in this area. A 1999 listing compiled by AACP14 indicated that only 29 schools of pharmacy offered a CAM educational component. Information was not presented regarding how these data were collected. Some of the differences in these study results may be due to different terminology used in the survey instruments, or might accurately reflect curriculum changes over 2 years. A literature review determined that more recent survey data have not been published on this topic. To address this void, this study was undertaken to determine if there have been increases in natural product courses at schools of pharmacy, reflecting continued patient demand, as well as compliance with AACP recommendations. This survey also assessed course specific information, including course enrollment, texts used, topics addressed, and instructor demographics.

METHODS

Data were collected via a telephone survey of each of the 81 institutional member schools of the American Association of Colleges of Pharmacy in the United States. In April 2002, calls were made to the Dean’s office of each school, and the interviewer was then directed to a faculty member with expertise in natural products or who coordinated a course in this area. If the Dean’s office responded that there were no faculty members addressing the topic, then the school was classified as not addressing this topic in its curriculum.

The interviewer then attempted to contact the faculty member identified by the Dean’s office and administer the survey to that person. If the individual was not immediately available, a message was left requesting a return call to discuss a course that the faculty member taught. Institutions were defined as non-responders when no response was received after 3 separate messages.

The survey instrument was divided into three areas: course design, faculty demographics, and institutional information. The study was approved by the Social Science Investigational Review Board of the University of Missouri - Kansas City. Survey data were managed and analyzed by the Statistical Package for Social Sciences (SPSS, Chicago, IL).

RESULTS

Responses were initially obtained from 72 of the 81 schools contacted (89%). Seven schools did not follow the traditional semester credit hour schedule, which was integral to providing usable responses for several survey questions, thus their data were not included. One school declined to provide complete data, and therefore their data were also excluded. The final results represent 64 (79%) of the schools of pharmacy in the US.

Forty-three responders (67%) were state institutions, of which 34 schools (79%) addressed the topic of natural products in their curriculum. Twenty-one responders (33%) were private institutions; of which 18 (86%) covered natural products in the curriculum.

Respondents indicated that coursework was primarily offered in the form of electives (Table 1). Exceptions to this were when natural product information was provided within the confines of another course, such as nonprescription products, pharmacology, or therapeutics ("Miscellaneous Lectures" in Table 1). Natural products were included more often as a component of a general CAM course than as an individual, focused course. In general, the topic of natural products in a focused course was taught in 40 (63%) of responding schools, while 11 schools (17%) offered only miscellaneous lectures on these topics in other courses. Thirteen survey respondents did not include the topic of natural products in their curriculum in any form.
The courses focusing on CAM/natural products averaged 2.45 credit hours (range: 2-3 hours), and fell most commonly in the third professional year (range: first to fourth year). Data were not collected regarding total curriculum length of responding schools. The CAM courses (n=23) covered a variety of alternative therapies; however, the most common focus (78.45% 95 CI: 70.59-86.31) was on natural products.

The average enrollment for these courses was 48 pharmacy students (range 10-145 students). Recognizing that the range in class sizes may have dramatically skewed these results, an average was also calculated based on percent of graduation class (determined by respondent replies). Results indicated that 30 percent of graduating pharmacy students had taken a course focused on CAM/natural products while 14% of graduating students had at least attended some miscellaneous lectures on CAM/natural products in their pharmacy curricula.

Table 2 details the required/recommended texts identified by survey respondents. The natural product courses and lectures were taught most often by instructors holding a PhD (49%), followed closely by those holding a PharmD degree (43%). The majority of instructors (71%) did not maintain a clinical practice setting.

Clinical rotations giving additional exposure to CAM/natural products were offered at 12 (24%) institutions. This included two institutions that did not offer a CAM/natural products focused course. Most of these elective rotations were in an integrated
medicine clinic or ambulatory care site with a large population that uses CAM therapies.

Data from the 7 schools not using the traditional semester system indicated that 2 respondents offered courses focusing on CAM, with at least some natural product content, while the other 5 responders incorporated these therapies into other modules or units.

DISCUSSION

One of the most disconcerting results of this survey is that the number of schools with no CAM/natural product offering has not changed since the last similar survey performed in 1997. This is particularly troubling in light of increasing consumer demand for information from pharmacists, as well as AACP recommendations for inclusion of these topics into coursework.

However, there have been some encouraging changes in education about CAM/natural products. The number of schools offering courses devoted to CAM/natural products topics has increased from 7 to 40 over the last 5 years. This may in part reflect the high student interest in these topics, which has been identified as a common motivation for inclusion of CAM coursework. It is also interesting to note the number of CAM/natural product clinical rotations. Based on the comments of the faculty members who were surveyed, this number will continue to grow, again reflecting increased student interest. Particularly noteworthy is the offering of a CAM/natural product rotation at 2 institutions that did not offer a focused course on that topic. This may reflect the lack of experienced faculty in this area, a lack of available hours in the curriculum, or an institutional recognition of student desire to learn about this topic.

There have been few firm recommendations given by authoritative bodies in either pharmacy education or in natural products to assist in the area of curriculum development. Thus, lacking a standard recommended list of competencies to cover in a course, each instructor is left without guidance to select appropriate topics as well as develop appropriate assessment tools. The topics covered may, to some extent, reflect instructor preferences or expertise; however, these variations make course development more difficult for new faculty and those revising existing courses. This difficulty is amplified by the limited number of publications assessing teaching concerns specific to instruction in CAM therapies. One of the few consistent elements in the assessed courses was the focus on natural products as opposed to CAM in general, indicating wide acceptance of the idea that this is the area in which pharmacists can offer the greatest impact.

The authors have identified several fundamental issues for inclusion in a CAM/natural product course. These issues include: factual information regarding common natural products, training in the evaluation of product claims, fundamental product quality/safety issues, regulatory aspects of natural products, and exposure to reliable natural product resources. Skills in evaluation of product claims are important due to the largely unregulated nature of supplements. Pharmacists need to be able to assess the available scientific literature themselves to determine the level of evidential support for a product’s use. Because product preparations vary greatly in composition and quality, students must be made aware of these issues in order to help a patient make a decision about a specific product. Knowledge of the Dietary Supplement Health and Education Act of 1994, as well as subsequent changes in regulations, will allow pharmacists to determine which products do comply with regulations and avoid potential legal pitfalls of sales and merchandising. A course must also teach students effective techniques for opening an accepting and nonjudgmental dialogue with their patients regarding natural product use.

A final element that is especially difficult in developing CAM/natural product coursework is the selection of required/recommended texts. Recommendations do exist for references appropriate for use in a drug information center. However, these recommendations may not be appropriate for course texts, due to course-specific elements such as learning objectives, teaching methods, and topic coverage. The controversy regarding text selection may reflect in part a perceived lack of high-quality, comprehensive, published references written for pharmacy professionals. It may also reflect a realization that information about natural products is changing.
so rapidly that the lag time inherent with the publication process may lead to publication of texts that are already outdated upon release. While these are valid concerns, the lack of exposure to any natural product resources does have negative ramifications for students. They become practitioners without knowledge of the reference materials available to assist them in responding to patient information requests.

Limitations

This study was subject to several limitations. First, the accuracy of the schools’ response was contingent on the initial contact person recognizing and appropriately directing the interviewer to the faculty who was best qualified to respond to these questions. Therefore, it is possible that some schools that were categorized as not addressing natural products in their curriculum might in fact offer instruction in this area.

Secondly, it is possible that the faculty interviewed may not have been aware of other course offerings or clinical rotations in which students may receive CAM/natural product education. The authors believe this to be unlikely in light of the close interaction among instructors in the same specialty area. It is also possible that some of the estimates of course enrollment and graduating class size provided by responders could have been inaccurate, thus affecting some of the enrollment statistics provided.

CONCLUSION

As long as significant numbers of consumers continue to use natural products, it is imperative that healthcare practitioners, especially pharmacists, gain knowledge of these products, as patient safety and well-being are at risk. Pharmacists are not called upon to police patients’ efforts to self-medicate, but instead to fully embrace the concept of pharmaceutical care, by discussing with patients the risks and benefits associated with natural product use. Schools of pharmacy have an obligation to their students and the public to prepare graduates who are ready to enter contemporary pharmacy practice. This survey details the extent to which schools of pharmacy are currently preparing their students to advise and educate patients who are using natural products. While more schools are providing this training, there is still a need to improve the breadth and scope of this education. Failure to educate future practitioners about natural products does a great disservice to patients and misses an opportunity for pharmacists to reclaim their niche as experts in this area.

REFERENCES


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