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Teaching and Learning Matters

An elective course to enhance students' knowledge and confidence in natural products

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Abstract

Background: To create and evaluate the impact of an elective course in increasing knowledge and developing students' confidence to counsel patients in the area of natural products (NP).

Educational activity: A 2-hour elective course was designed to create an opportunity for students to learn about the role of natural products in pharmacognosy, ethnobotany, alternative, and traditional medicine. The course employs lectures, active learning activities, student presentations, group discussions, and a simulation practical examination.

Critical analysis of the educational activity: Student knowledge was assessed based on grades. A pre-course and post-course survey was used to describe students' confidence in the appropriate uses of NP and knowledge about complementary and alternative medicine. End-of-course evaluations were used to assess students' satisfaction with the course.

Conclusions: Students agreed that this course gives them the knowledge and confidence to communicate with patients about NP, identify dietary supplement/drug interactions, and report adverse effects, while believing that conventional medicine could benefit from alternative medicine approaches.

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Keywords: Dietary supplement; Natural products; Complementary medicine; Alternative medicine; Herbs; Elective course

Background

Studies have revealed that both actual and perceived knowledge of natural products (NP) is low among pharmacists.¹ Yet, one study showed that nearly 80% of the pharmacists surveyed make efforts to learn about NP one to six times per year.² This disparity between preparedness and attitude suggests that the hesitation pharmacists feel in discussing NP is not entirely a matter of perceptions, but instead it may be more heavily based on a lack of information. The underlying issue, therefore, seems to be the degree of pharmacist education and knowledge surrounding NP. Despite 63% of American pharmacy schools

offering a focused course on NP, less than one-third of pharmacy graduates actually take such a class.³ The majority of these schools (87.5%) offer this material as elective courses focused on some modality of complementary and alternative medicine (CAM), making it difficult to estimate how many of these schools are focusing on herbal products and dietary supplements (DS).

CAM is defined as non-mainstream practices used together with, or in place of, conventional medicine. There are different types of CAM, including body-based therapies, mind-body interventions, energy therapies, alternative medical systems, and biologically based therapies. NP, either in the form of crude herbals or DS, are commonly used by alternative medical systems and biologically based therapies. Crude herbals differ from DS in how the products are processed. Pharmacognosy, on the other hand, focuses on the study of the medicinal properties of NP for the purposes of drug discovery and development. In a study of pharmacy

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students' perceptions conducted by Shah et al.,⁴ 95% of student respondents felt they required more information about herbal supplements. Of the fourth-year pharmacy students who responded to a survey conducted at the University of Wisconsin, 83% believed that CAM practices should be included in their school's curriculum.⁵ These student attitudes regarding NP information are not unlike those of practicing pharmacists.² Understanding where herbals and DS play a role in therapy lags behind the desire for further education.

In an effort to gather information about elective courses that would interest students as part of their specialized concentration, the Belmont University College of Pharmacy curriculum committee surveyed first-, second-, and third-year students. Using an open response format, students were asked to list three elective courses in which they would be most interested in enrolling. The response rate of this short survey was 96.3% ($N = 209$ students). Based on their response, the most desired elective topic was natural products—with a frequency of 68%—followed by oncology, advanced pharmacy calculations, and drugs of abuse and addiction. At the time of the survey, our students received 150 minutes of a didactic CAM overview as part of a self-care course in the fall of their second year. The discrepancy between our coverage of NP material in the curriculum and our students' self-identified needs created an opportunity to have conversations about our current course offerings. The major challenge was allocating a viable space in the curriculum where this material could be delivered without altering the number of required credit hours for graduation.

Multiple methods for incorporating NP into health care education have been described in the literature. NP electives have been incorporated into the curriculum for fourth-year medical students, as well as into medical residencies. However, accessing NP experiential education for students presents a barrier.^{6,7} Within pharmacy schools, NP content has been woven into core curriculum and has also been presented as a focused, required course.^{8,9} While these methods are successful at increasing students' knowledge and confidence in the realm of NP, replicating such courses requires significant restructuring of core curriculum, presenting substantial time barriers.^{8,9} One survey of pharmacy faculty indicated that while all instructors were willing to include NP content into courses, 75% of them also felt that they did not have adequate time to teach NP in their current curriculum.¹⁰ Comparatively, an approach such as a 1-day interactive CAM session may be an insightful introduction to students and require fewer resources.¹¹ However, this model does not allow sufficient time to learn about the wider extent of NP.

Recognizing the lack of preparation surrounding non-conventional medicine that many student pharmacists report, this article describes the development and implementation of a NP elective course for second- and third-year pharmacy students. This elective was specifically designed

to increase students' knowledge and develop their confidence in the area of NP, all the while being mindful of the unique challenges of incorporating NP into current curricular structure and taking advantage of the specialized concentrations in our program. Unlike electives described in the medical profession, this elective was designed for students not yet in the clinical rotation phase of their education, and it did not rely on access to clinical NP practice sites. Relative to other courses implemented within pharmacy curriculum, this elective utilized a broad range of NP topics as well as teaching and assessment tools, all of which have few barriers to implementation by other pharmacy programs. The purpose of this elective course was to teach students how to be able to apply fundamental knowledge in NP research to help their patients make informed decisions.

Educational activity—Description

Course design and implementation

In an attempt to offer NP material as part of a core course, recommendations were made to cover more CAM material during the self-care course. The proposal fell short due to the high volume of material that is already covered in this 3-credit-hour course. Another proposal was submitted to the curriculum committee to add NP as a stand-alone course within the core curriculum, but a major challenge arose due to the lack of available credits in an already loaded curriculum, making it virtually impossible to implement in the immediate future. The opportunity to develop a new elective course on NP was presented to the instructor, even though it was understood that the demand was going to be higher than the available number of seats in the course. In response to student feedback, the limited amount of NP education in our curriculum, the relevancy of current trends in NP use, and the time constraints of making curricular adjustments, a natural product elective was implemented at the Belmont University College of the Pharmacy.

The 2-credit-hour natural products elective course was initiated in the spring semester of 2012, and it continues to be offered either in the fall and/or spring semester. The course meets once a week for one hour and 40 minutes, and has been offered on five different occasions. Enrollment was limited to 20 students at the time of registration due to the fact that elective courses are designed to be taught in small classrooms conducive to easier interactions, and to be able to offer a number of different elective courses each semester in our Pharm.D. program. Students in the second and third year of the pharmacy program were allowed to enroll in the course, as it requires that students have successfully completed biochemistry, as well as three semesters of pharmacodynamics. The course was designed so that upon its completion students would be able to—(1) describe the process by which drugs are discovered from plants, (2) compare and contrast the regulatory process between

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