RESEARCH ARTICLES

Complementary and Alternative Medicine Education: Students’ Perspectives

Arjun P. Dutta, PhD, a Patrick A. Miederhoff, PharmD, PhD, b and Michael A. Pyles, PhDb

aSchool of Pharmacy, Howard University
bSchool of Pharmacy, Virginia Commonwealth University

Objectives. The objective of this study was to determine the attitudes and beliefs of pharmacy students that prompt them to take an elective course in complementary and alternative medicine (CAM) while in pharmacy school.

Methods. A questionnaire was administered to 90 third-year pharmacy students, 55% of whom were taking the elective course. The questionnaire was designed to assess student attitudes towards CAM in 5 areas: future concerns for professional competence, personal interest, personal experience, beliefs, and philosophical congruence. Students taking the elective course were compared with students not taking the course for the 5 areas.

Results. The 2 student groups differed in their personal interests and beliefs.

Conclusions. Belief system and personal interest were found to be significant motivating factors for selecting an elective in CAM among the pharmacy students surveyed.

Keywords: alternative medicine education, motivation, student knowledge, cultural belief

INTRODUCTION

Alternative medicine or therapies are not widely taught in medical schools in the United States (US) or available at US hospitals/health care facilities.1 Complementary and alternative medicine (CAM) includes but is not limited to homeopathic medicine, chiropractic medicine, Chinese medicine, the prescribing of megavitamins, magnetic therapy, Ayurveda, aromatherapy, naturopathy, and African medicine. Over the past decade, the use of alternative medical practices and treatments has dramatically increased in the US.2 Patients are willing to spend out-of-pocket dollars for CAM therapies, and in recent years, the amount spent on CAM therapies rivals that spent on primary physician services.3 To keep up with the demand for CAM information, in 1992 the US Congress established the Office of Alternative Medicine (OAM), currently named National Center for Complementary and Alternative Medicine (NCCAM), to study unconventional medical practices.3 A possible reason for this shift from conventional to unconventional medicine is the perspective that Western medicine lacks “caring for the whole patient.”4 Others have attributed the widespread use of CAM by consumers to their value systems, beliefs, and philosophical orientations towards life in general, rather than to dissatisfaction with conventional medicine.5

In an attempt to meet the overwhelming demand for information and education about alternative therapies, US medical schools have increased the number of CAM courses offered.6,7 This overwhelming increase in the demand for CAM therapies also adds a new dimension to the traditional role of a pharmacist. It is important for pharmacists to be aware of patients’ use of CAM therapies. Many patients do not routinely tell their physicians about alternative medicine use nor do physicians routinely ask about it.8 This makes the pharmacist’s involvement in CAM use by consumers even more critical. In a solicited report to the American Board of Internal Medicine, Dr. Eisenberg of the Harvard Medical School, mentioned the need to include pharmacists in the medical decision-making process for nutraceuticals that are either prescribed or recommended to patients.9 To keep abreast of information in this burgeoning field, the American Pharmaceutical Association is encouraging pharmacists to advance their knowledge in CAM through continuing education and even provides support
for such education. In an effort to integrate CAM education early in pharmacy school, Kouzi calls for developing a curriculum that incorporates CAM as an integral part of the pharmacy curriculum.

The need to integrate alternative medicine in pharmacy curricula has also been acknowledged by schools of pharmacy. A survey of pharmacy schools by Rowell and colleagues found that 72% of the schools offered coursework in some area of CAM. In keeping with its role of training pharmacy students with up-to-date skills, the School of Pharmacy at Virginia Commonwealth University (VCU) began offering an elective course in CAM in the spring of 1997. The pharmacy curriculum at VCU requires that pharmacy students in their third year of study take elective courses as a part of their didactic coursework. Fifty of the 90 students (in their third year of the curriculum at VCU) enrolled in an elective course in alternative medicine. The remaining 40 students enrolled in other (approved) electives of their choice within the university.

This raised an important question: What motivates pharmacy students to take an elective in CAM? We believe that it is very important to understand, from the students’ perspective, the direction in which the profession of pharmacy is or should be headed with respect to CAM. Additionally, since some students selected this elective course in alternative medicine as opposed to one of the other electives, this allowed us to draw some comparisons between 2 groups of pharmacy students (those taking the elective course versus those who did not) in terms of their attitudes and professional beliefs regarding alternative therapies.

METHODS

An 18-item questionnaire was developed based on the Astin study (Appendix 1). The survey instrument used in the Astin study was constructed to assess attitudes and beliefs of consumers towards CAM therapies. Based on Astin’s theoretical construct, the authors hypothesized 5 factors that might influence a student’s decision to take the CAM course. Using input from academic and practicing pharmacists, the authors then generated survey-items to load onto the individual 5 factors. The survey required participants to rate items based on a Likert-type scale with “strongly agree” responses valued at 5 and “strongly disagree” responses valued at 1. The entire questionnaire was summed over the 18 items. A higher score indicated that the respondents felt that CAM education was important to them in terms of their beliefs, interest in the subject, and their future practice of pharmacy. A Cronbach’s Alpha of 0.86 indicated the questionnaire was reliable and internally consistent. A factor analysis (usually a measure of the construct validity of an instrument) was also conducted to confirm the multidimensional structure of the instrument and provide evidence of ‘construct’ validity. The factor analysis revealed 5 factors (Eigen values > 1, accounting for 67% of the total variance) that were consistent with the factors originally hypothesized by the authors.

The purpose of the survey was to discern pharmacy students’ attitudes and perceptions regarding CAM. The 5 categories/factors in which responses were elicited included: (1) future concerns for professional competence; (2) personal interest; (3) personal experience; (4) beliefs; and (5) philosophical congruence. In addition to the questionnaire items, demographic data were also elicited from the students. Investigational review board approval was obtained prior to the administration of the questionnaire. All respondents signed a consent form that stated the purpose of the survey and assured them that only aggregate results would be reported.

The authors administered the questionnaire to all third year students at VCU. The survey was conducted during a regular class period at the beginning of the semester in which this elective was first offered. An analysis of variance (ANOVA) was performed to determine which responses to the above-mentioned categories were significantly different between the 2 groups of students (those taking the elective course versus those who did not). The significance level for the ANOVA was set to 0.05 for this sample of pharmacy students.

RESULTS

A total of 82 completed questionnaires were returned. Of the 90 third year pharmacy students, 50 (56%) had enrolled in the alternative medicine elective course. Forty-seven (94%) of these students returned completed questionnaires. Thirty-five (88%) of the 40 students not enrolled in the elective course also returned the completed questionnaire. Our survey population consisted primarily of females (84%). White students were by far the majority (56%), followed by Asians (36%) and African-Americans (8%). The mean age of the student population was 25.5 years, with a standard deviation of 3.46. The minimum and maximum age reported were 21 years and 39 years, respectively. Table 1 provides the gender and race demographics of students enrolled in the elective course. The 2 groups studied (those taking the CAM elective and those who did not) were not significantly different with respect to age or gender (P>0.05), but were different with respect to race.
Table 1. Demographics of Pharmacy Students Responding to a Survey Concerning Enrollment in a CAM Elective (N=82*)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Are you currently enrolled in an elective course?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>17</td>
</tr>
<tr>
<td>African-American</td>
<td>3</td>
</tr>
<tr>
<td>Asian</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
</tr>
</tbody>
</table>

*Total number of students who responded

Table 2. ANOVA (Dependant variable = enrolled in an elective; N= 82)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sum of Sq.</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>11.639</td>
<td>82</td>
<td>0.211</td>
</tr>
<tr>
<td>Race</td>
<td>69.388</td>
<td>79</td>
<td>0.01*</td>
</tr>
<tr>
<td>Professional competence</td>
<td>20.099</td>
<td>80</td>
<td>0.323</td>
</tr>
<tr>
<td>Personal interest</td>
<td>20.111</td>
<td>80</td>
<td>0.05*</td>
</tr>
<tr>
<td>Personal experience</td>
<td>19.899</td>
<td>80</td>
<td>0.224</td>
</tr>
<tr>
<td>Beliefs</td>
<td>20.101</td>
<td>79</td>
<td>0.05*</td>
</tr>
<tr>
<td>Philosophical congruence</td>
<td>20.099</td>
<td>80</td>
<td>0.127</td>
</tr>
</tbody>
</table>

*Denotes significance.

(P<0.01). This can be attributed to the higher number of Asian students that enrolled in the elective course.

Aggregate scores for the questionnaire ranged from 18 to 90, with a mean score of 67.54. Lower scores indicated a decreased level of interest, belief, and/or perceived importance to future practice of pharmacy in alternative medicine. Regardless of whether they had taken the elective, a majority of the students indicated that the CAM course should be required in the curriculum and that knowledge about CAM was important to their future practice as a pharmacist (items 2 and 4, in the survey).

An ANOVA (Table 2) was performed to compare the students taking the elective course to the group of students not enrolled in the elective course with regard to the 5 proposed categories or factors that contribute to a student's selection of an elective course in alternative medicine. The purpose of the ANOVA was to delineate those factors that were significantly different for the 2 groups of students. The independent variables were the 5 factors: future concerns for professional competence, personal interest, personal experience, beliefs, and philosophical congruence. The dependent variable for the ANOVA was whether the student was enrolled in the elective course.

The 2 groups of students differed significantly (P<0.05) in their personal interest and beliefs toward alternative medicine. Students taking the elective had a significantly higher score for these 2 factors. This indicated that students taking the elective had a stronger personal interest in alternative medicine as well as a stronger belief in alternative healing practices. The groups’ scores did not differ significantly in their response to the other 3 factors analyzed.
The fact that the 2 groups tended not to differ \( (P>0.3) \) with respect to their future concerns for professional competence was interesting. Both groups felt that knowledge and awareness of alternative medicine was important to their future practice of pharmacy.

This finding highlights the necessity to incorporate more elective courses in alternative medicine into the curriculum and perhaps even to integrate alternative medicine education into established didactic pharmacy courses.

**DISCUSSION**

The personal interest and beliefs factors were significantly different for students enrolled in the elective course versus those who were not. Other studies have shown that choosing alternative therapies is often due to a personal interest and philosophy or belief in such modalities.\(^1\)\(^8\) Similarly, choosing an elective course in CAM instruction was predominantly guided by the personal interest and belief structure of students, as demonstrated by our results. Moreover, there were a significant number of Asian students enrolled in the alternative medicine elective compared to the numbers of students of Caucasian or African-American origin. What is labeled as “alternative medicine” by Western medicine is one of the predominant modalities of health care in traditional Asian cultures.\(^2\) A cross tabulation of aggregate scores indicated that Asian students reported higher scores for the personal interest and beliefs factors. The difference between the 2 groups with respect to these factors may have been due to the larger number of Asian students enrolled in the alternative medicine elective.

Since interest in alternative medicine and a philosophical belief system that is congruent with alternative modalities is more common in Asian cultures, it may well have caused the factors of personal interest and beliefs to be significantly different between the 2 groups of students. A similar theory has been espoused by Astin, who found that most people who choose alternative therapies do so not because of their dissatisfaction with conventional medicine, but because they find alternative modalities to be more consistent with their own values, beliefs, and philosophical orientations towards health and life.\(^5\)

**Limitations**

Some of the methodological limitations of this study were that students were already enrolled in the class when the questionnaire was administered and their beliefs and opinions may have already been influenced by the course content. The authors could not control for attitudinal changes that occurred subsequent to starting the class. However, since the survey was conducted at the beginning of the semester, the authors believe that student opinions were not dramatically influenced in such a short period of time. Moreover, students were not randomly selected from across the country and the results may reflect only the opinions of students from one particular region or school. A similar study should be conducted on a national or state level to see if the findings hold true for other pharmacy students as well. The authors also could not control for the fact that competing elective course schedules may have caused a student not to enroll in the CAM elective course, despite an interest in CAM. However, a student’s choice of another elective over the CAM course may reflect his or her attitude and opinion about CAM education. The findings of the study indicate a general interest and desire among pharmacy students to be more cognizant of CAM therapies, irrespective of taking the elective course.

**CONCLUSIONS**

All of the students surveyed reported that education in alternative and complementary medicine was important to them professionally. Their beliefs systems and personal interests in CAM seem to be the driving force behind students choosing an elective course in CAM. This study demonstrates that students identified themselves with the growing demand for CAM in the US and they felt responsible as future pharmacists to be prepared to meet the changing needs of the health care consumer.

**REFERENCES**

Appendix 1. Questionnaire distributed to pharmacy students concerning their decision to enroll or not to enroll in a CAM elective.

A pharmacist should be aware of alternative approaches in health care.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Knowledge about alternative medicine will be required in my future practice of pharmacy.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

I believe pharmacists have a responsibility to advise patients on alternative medicine.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Alternative Medicine should be a required course in the PharmD curriculum at VCU.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Knowledge about alternative medicine is not important to my future practice of pharmacy.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

I am personally interested in alternative medicine.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Alternative medicine is an important aspect of my family’s health care.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

I have personally used alternative approaches to health care.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Alternative medicine is an important aspect of my culture.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

Someone in my immediate family has used alternative medicine.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

I believe that alternative medicine can make significant contributions to health care outcomes.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree

I believe that there are limitations to conventional approaches in health care.

1. Strongly disagree
2. Not sure
3. Somewhat agree
4. Agree
5. Strongly agree
I believe that patients should have the right to choose between conventional and alternative approaches in health care.

I believe in non-traditional approaches to health care.

I believe spirituality plays a role in health.

I lead a healthy life-style.

I am willing to explore new and different approaches in health care.

Please check the appropriate response in the space provided.

Age
Male Female
White African American Asian Hispanic
Annual Family Income (approximately)
$25,000- 50,000 $50,000- 100,000 more than $100,000
Are you an immigrant? Yes No
Are you a first generation American? Yes No
Are you a second generation American? Yes No
Has your family settled here for more than two generations? Yes No
Are you currently enrolled in the Alternative Medicine elective? Yes No

Please circle the appropriate response.

I tend to enjoy and learn more in those classes where students are given more opportunity to be involved in the learning process.

Thank you!