Comparison of Pharmacy Practitioner and Pharmacy Student Attitudes Toward Complementary and Alternative Therapies in a Rural State

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The purpose of this project was to perform a needs assessment for pharmacy practitioners and measure the attitudes of both pharmacy practitioners and students regarding alternative therapies. A 15-item-five-point scale questionnaire designed to measure the educational needs and attitudes of pharmacists regarding complementary and alternative medicine (CAM) was developed and mailed to 200 randomly selected practitioners. After two mailings, 94 (47 percent) were returned. A modified version of the questionnaire was administered to 35 students pharmacy students. The returned questionnaires were tabulated and identical items were statistically compared using nonparametric analyses. Significant differences were the following: practitioners were less likely to favor pharmacists becoming practitioners of CAM; practitioners believed those alternative therapies offered by pharmacists would decrease the public's respect for the profession; students were more likely to believe that sufficient evidence exists supporting the use of some alternative therapies; student's were more likely to believe that pharmacy as a profession should aggressively pursue opportunities in alternative medicine; students were more likely to refer a patient to a practitioner of CAM; and students were more likely to believe that alternative therapies will offer new means for the pharmacist to develop primary care services. We do not know if other rural and urban states have similar disparities between pharmacy practitioners and students, but we share this data in case a needs assessment should be done in other states.

INTRODUCTION

Western medicine, either through restriction of access or over-regulation, may have lost its 'caring for the whole patient' perspective, resulting in a patient-mandated interest in other 'holistic' practices(1). In a health care environment replete with regulatory and safety issues(2), Complementary and Alternative Medicine (CAM) use by the general public has increased from about 33 percent in 1990 to more than 42 percent in 1997(3). CAM includes a variety of unconventional healing practices and practitioners. Examples include unconventional healing systems (acupuncture, homeopathy, naturopathy), popular health reform (mega-vitamins), new age healing (crystals and magnets), mind-body (Deepak Chopra), and non-normative (chelation)(4). Health care consumers are changing the medical market through their use of CAM. A recent essay by Kaptchuk and Eisenberg documents the historical shift CAM has undergone — from being previously viewed as marginal and fraudulent to acknowledgment as a component of postmodern medical pluralism(5). Some examples of CAM use relevant to pharmacy practice and education are illustrated in the following.

Patients undergoing cardiac surgery reported using CAM in 75 percent of respondents when prayer and vitamins were included as therapeutic options(6). Patients receive their information regarding a range of CAM therapeutic options from physicians, pharmacists, nurses, physical therapists, nutritionists, alternative medicine specialists, friends, and health food store employees. The quality and accuracy (*i.e.,* scientific validity) of the information used by the patient from these sources vary considerably. While posing as a relative, an investigator received product recommendations for breast cancer from health food store employees most frequently for shark cartilage(7). Although used for cancer treatment, scientific review of shark cartilage currently is considered "likely ineffective when used orally for treating cancer(8)." A survey of a low-income population revealed reported use of herbs or supplements (nutraceuticals) at 56 percent. Forty-one percent of users cited friends or relatives as their main source of information. In the same study, 69 percent of their health care providers admitted they had received no education about nutraceuticals(9).

Seventy-seven out of 117 U.S. medical schools included CAM topics in required courses or offered elective courses in CAM in 1998(10). To some observers, this change in patient use and the necessity of teaching CAM is a "reverse technology transfer(11)." Nursing is actively incorporating CAM therapies into their curricula(12). In responses to a survey of schools of pharmacy, 50 of the 77 schools reported that 72 percent offered course work in some area of CAM(13). In a comparison of final-year medical, physical therapy, occupational therapy, nursing, and pharmacy students in Canadian schools, medical students reported the least amount of education about CAM. Pharmacy and medical students also desired more traditional scientific forms of evidence as a prerequisite to accepting CAM therapies(14). In the "Annual Report to Our Stakeholders," the director of the National Center for

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Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1	2	3	4	5

1 2 3 4 5	1.	Alternative therapies are an area I believe pharmacy as a profession should pursue aggressively. *This elective class concerning alternative medicine should become a required course.*
1 2 3 4 5	2.	Sufficient evidence exists which supports the use of some alterative therapies. *Pharmacists should not become practitioners of alternative therapies.*
1 2 3 4 5	3.	Alternative therapies are mostly quackery and should not be associated with pharmacy practice. *Alternative therapies are an area I believe pharmacy as a profession should pursue aggressively.*
1 2 3 4 5	4.	Alternative therapies offered by pharmacists will decrease the public's respect for the profession of pharmacy. *Schools of pharmacy should not require educational time for alternative therapies.*
1 2 3 4 5	5.	Alternative therapies will offer new means for pharmacists to develop primary care services. *This class has generated my interest in pursuing further education regarding alternative therapies.*
1 2 3 4 5	6.	I would refer a patient/client to an alternative therapy practitioner. *Alternative therapies offered by pharmacists will decrease the public's respect for the profession of pharmacy.*
1 2 3 4 5	7.	I do/will/would stock natural products related to naturopathy/homeopathy in my pharmacy. *Sufficient evidence exists which supports the use of some alterative therapies.*
1 2 3 4 5	8.	I believe insurance companies should cover alternative therapy services. *I would refer a patient/client to an alternative therapy practitioner.*
1 2 3 4 5	9.	Herbal therapy is an example of alternative medicine. *I do/will/would stock natural products related to naturopathy/homeopathy in my pharmacy.*
1 2 3 4 5	10.	Schools of pharmacy should not require educational time for alternative therapies. *This class will not influence the way I view pharmacy practice.*
1 2 3 4 5	11.	Chiropractic is an example of alternative therapies. *I would recommend alternative therapies in my pharmacy because it is a means of generating income for me or the profession of pharmacy.*
1 2 3 4 5	12.	I would recommend alternative therapies in my pharmacy because it is a means of generating income for me or the profession of pharmacy. *Alternative therapies are mostly quackery and should not be associated with pharmacy practice.*
1 2 3 4 5	13.	I would be interested in attending a continuing educational program related to alternative therapies. *I would recommend this class to other students or pharmacists interested in alternative medicine.*
1 2 3 4 5	14.	Pharmacists should not become practitioners of alternative therapies. *Alternative therapies will offer new means for pharmacists to develop primary care services.*
1 2 3 4 5	15.	Mind/body relaxation techniques are examples of alternative therapies.

Fig. 1. Complementary and alternative medicine questionnaire designed to assess the educational needs and attitudes of pharmacists and students. Student questions are italicized.

Complementary and Alternative Medicine predicts that science will convert some CAM therapies into "integrative medicine" therapies and eventually several nutraceuticals will be standardized for routine use in western medicine(15).

In a presentation to American Board of Internal Medicine, Dr. Eisenberg includes pharmacists as professionals that need to have access to nutraceutical information for products used by the public(16). Kouzi makes a case for developing a curriculum to cover natural products as a component of pharmacy school curriculums(17). The American Pharmaceutical Association is providing support and continuing education at conferences to educate practicing pharmacists about nutraceutical therapy(18). Are these efforts having an effect? Do pharmacists see CAM as a needed area for continuing education? What are the attitudes of both practicing pharmacists and pharmacy students with respect to CAM? The purpose of this project was to perform a CAM needs assessment for pharmacy practitioners in a rural state and measure the attitudes of both pharmacy practitioners and students regarding alternative therapies.

METHODS

Study Design and Subjects

A cross-sectional survey design was used to assess educational needs and attitudes of pharmacists regarding CAM. A sample of 200 practicing pharmacists was randomly identified using a table of random numbers and mailed the questionnaire. Nonresponders were re-mailed the questionnaire one month later. A modified version of the questionnaire was administered

Table I. Comparison of pharmacy practitioner (n=94) and pharmacy student (n=35) knowledge and attitudes regarding alternative therapies

Item		Percent (Frequency)		
		Disagree	Undecided	Agree
Pharmacists should not become practitioners of alternative therapies.*	Pharmacists Students	45.7 (43) 79.4 (27)	27.7 (26) 20.6 (7)	26.6 (25) 0.0 (0)
Alternative therapies are an area pharmacy as a profession should aggressively pursue.*	Pharmacists Students	34.4 (32) 20.0 (7)	26.9 (25) 17.1(6)	26.9 (25) 62.9 (22)
Sufficient evidence exists which supports the use of some alternative therapies.**	Pharmacists Students	13.8(13) 0.0 (0)	18.1 (17) 0.0 (0)	68.1 (64) 0.0 (0)
Alternative therapies are mostly quackery and should not be associated with pharmacy practice.*	Pharmacists Students	62.4 (58) 87.9 (29)	22.6 (21) 6.1 (2)	15.1 (14) 6.1(2)
Alternative therapies offered by pharmacists will decrease the public's respect for the profession of pharmacy.*	Pharmacists Students	67.7 (63) 91.4 (32)	17.2 (16) 8.6 (3)	15.1 (14) 0.0 (0)
Alternative therapies will offer new means for pharmacists to develop primary care services.*	Pharmacists Students	18.3 (17) 6.1 (2)	31.2 (29) 18.2 (6)	50.5 (47) 75.8 (25)
I would refer a patient/client to an alternative therapy practitioner.*	Pharmacists Students	35.1 (33) 0.0 (0)	38.3 (36) 17.1 (6)	26.6 (25) 82.9 (29)
I do/will/would stock natural products related to naturopathy/homeopathy in my pharmacy.*	Pharmacists Students	14.4 (13) 0.0 (0)	23.3 (21) 17.6 (6)	62.2 (56) 82.4 (28)
Schools of pharmacy should not require educational time for alternative therapies.	Pharmacists Students	62.8 (59) 71.4 (25)	18.1 (17) 8.6 (3)	19.1 (18) 20.0 (7)
I would recommend alternative therapies in my pharmacy because it is a means of generating income for me or the profession of pharmacy.	Pharmacists Students	51.1 (47) 51.4 (18)	31.5 (29) 17.1 (6)	17.4 (16) 31.4 (11)

* Chi-Square, Significant Finding ($P < 0.05$).
** Fisher's Exact Test, Significant Finding ($P < 0.05$).

to 35 entry-level PharmD students enrolled in an elective CAM class. Figure 1 illustrates the CAM Questionnaire and the modified version used for pharmacy students.

Questionnaire Development

The CAM Questionnaire (see Figure 1) was developed specifically for this study and consisted of 15 items (14 items for the student questionnaire) using a five-point scale ("strongly disagree," "disagree," "undecided," "agree," and "strongly agree"). Content validity of the questionnaire was developed through a table of specifications that guided item development based on current literature in the area of alternative medicine. The questionnaire was reviewed and field-tested by two pharmacy practice faculty and one psychometrician to refine the initial items. The review consisted of having these persons take the questionnaire and make suggestions regarding question format and content. The result of the field test helped refine the questions through item analysis and provided additional evidence for content validity(19).

Analyses

Returned questionnaires were tabulated and identical items statistically compared (see Table I). The Chi-Square Test for Independence was employed to compare the responses of the practitioners to the students. Collapsing the five-point scale to a three-point scale (*i.e.,* disagree, undecided, agree) was required for all items due to violation of small cell expectancy. A significance level of $P < 0.05$ was used for the overall chi-square analyses, and when significant, a Bonferroni-adjusted post-hoc comparison was conducted(20).

RESULTS

After two mailings, 94 (47 percent) of the 200 pharmacist questionnaires were returned. All 35 of the questionnaires administered to the pharmacy students were returned. Significant differences on identical items are provided in Table I. When compared with students, pharmacists were less likely to favor the profession becoming practitioners of alternative medicine ($?^2 = 13.5$, $P < 0.001$). Pharmacists were more likely

to believe alternative therapies are mostly quackery and should not be associated with pharmacy practice ($?^2 = 5.4$, $P = 0.020$). And finally, pharmacists tended to believe those alternative therapies offered by them would decrease the public's respect for the profession (Fisher's Exact Test, $P = 0.005$).

Students, on the other hand, were more likely to believe that sufficient evidence exists supporting the use of some alternative therapies (Fisher's Exact Test, $P = 0.005$), and the pharmacy profession should aggressively pursue alternative therapies ($?^2 = 4.4$, $P = 0.035$). Students were more likely to believe that alternative therapies will offer new means for the pharmacist to develop primary care services ($?^2 = 4.2$, $P = 0.040$). Students would more readily refer a patient to an alternative medicine practitioner ($?^2 = 26.6$, $P < 0.001$) and were more willing to stock natural products related to nutraceuticals and homeopathy in their pharmacy (Fisher's Exact Test, $P = 0.008$). Lastly, students were more likely to recommend alternative therapies in the pharmacy as a means of generating income.

DISCUSSION

Significant differences existed between the opinions of pharmacists and students regarding CAM. In our state, when compared to students, practicing pharmacists were much less interested in alternative therapies as a means of improving practice and they were not interested in furthering their education in this area. We were surprised at these findings. As representatives of pharmacy education, we concluded that the state's pharmacists may benefit from some of the newer data related to CAM. Reviewing the fact that the public is using alternative products and therapies without always appropriate guidance should be a concern to the practitioners in our state. By providing more information regarding CAM and serving as a source for evidence-based data for decision-making, we believe more pharmacists will be interested in CAM as a means of promoting rational product use to the public. Therefore, we will share these data with our state association's continuing education (CE) division for the planning of future state wide CE programs.

Mackowiak and associates recently stated that all pharmacists, in order to provide pharmaceutical care, must have a basic knowledge of herbal products(21) and theoretically a working knowledge of CAM as a whole. Schools and colleges of pharmacy can serve their states by both educating pharmacists on the most recent trends in CAM and serving as a source of CAM-related information for use in pharmacy practice.

LIMITATIONS

Several factors limit this study. First, the students participating in this project were already interested in CAM since they chose this elective course. Therefore, the students were educated about CAM and, in this sense, were potentially more biased than other students in the school. Although the authors believe that these students' responses reflect the student population in general, this is not known. Second, the students in this study were also potentially more biased than the randomly selected pharmacists, since they were enrolled in this elective course. Third, we relied on a table of random numbers to identify the pharmacists who participated in this study but failed to ensure that the sample was a true representative of the state's pharmacists (*i.e.*, 60 percent community, 22 percent hospital, 18 percent other). Therefore, we can only assume the sample of pharmacists participating reflects the beliefs and attitudes of all the pharmacists in the state.

CONCLUSION

Even with these limitations known, the negative attitudes of the pharmacists were not expected. We assumed that most pharmacists were aware of the trends in CAM use and the importance of this knowledge to their practice and public safety. The negative attitudes uncovered in this study suggested a focused educational effort from the school was needed. In order to aid the public in the appropriate use and monitoring of alternative products and therapies, pharmacists must become better informed and know where to obtain evidence-based data related to CAM. We do not know if other rural and urban states have similar disparities between pharmacy practitioners and students, but we share this data in case a needs assessment should be done in other states.

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