Pharmacy and Osteopathic Students' Perceptions of Alternative Therapies

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ABSTRACT. Alternative or complementary medicine includes over a hundred therapies generally not taught or well documented in the United States. These alternative practices can be used in place of, or in concert with, conventional Western therapies. The popularity of alternative forms of health care continues to rise, and coverage of them in the lay literature increases. Given patient acceptance of alternative therapies, Western medical practitioners may be more effective if they are knowledgeable of these therapies and are able to address patients' questions, concerns, and beliefs. In this study, pharmacy and osteopathic students were surveyed as to their self-assessed knowledge and perceived usefulness of 20 therapies. In general, widespread knowledge about the therapies in either profession was not common. Students appeared somewhat uncertain about usefulness, rating the therapies as neither useful nor useless. The professions differed in their knowledge and perceived usefulness of biofeedback and holistic medicine, both of which were known and viewed favorably by more osteopathy than pharmacy students. Overall, increased knowledge of a therapy was positively associated with a favorable assessment of usefulness. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworthpressinc.com]*

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INTRODUCTION AND PURPOSE

Alternative medicine, also referred to as complimentary or unconventional medicine, encompasses many different therapies. Some common examples of alternative therapies are: acupuncture, aromatherapy, biofeedback, art therapy, chiropractic, macrobiotics, exercise therapy, magnetic therapy, holistic medicine, naturopathy, massage therapy, meditation, physical therapy, and psychotherapy. As a group, alternative therapies share characteristics which differentiate them from conventional or Western medicine (1-5). The cornerstone of alternative medicine is the belief that the human body is generally capable of healing itself. Health is viewed as a desired state of being, not merely the absence of disease. The goal of therapy is to stimulate the healing powers of the body. Alternative therapies tend to focus on the relationship between the patient and his or her environment. Likewise, the role of the provider in alternative medicine is to educate or help patients use their natural healing powers. Patient involvement and responsibility are key components of these therapies. The patient is actively involved in alternative therapies in contrast to the passive role traditionally assumed by the patient in Western or conventional medicine. Alternative therapies tend to be more concerned with the spiritual aspects of health and illness. Additionally, alternative therapies lack scientific documentation of safety and efficacy, typically are not taught in U.S. medical schools, and are usually not covered by health insurance plans.

Public acceptance of and support for alternative medicines is becoming more widespread (5-8). Public pressure led the U.S. Congress to establish the Office of Alternative Medicine in the National Institutes of Health (1). In addition, surveys repeatedly show favorable consumer support for alternative medicine. Knowledge of and accessibility to alternative therapies among the public are on the rise. Over one-third of all Americans utilize some form of alternative therapy, and often this use occurs without physician knowledge (5). Pharmacists may be a source of advice about the use of alternative medicine (9,10).

A traditional health professional may better serve his or her patients if the professional has a knowledge of alternative therapies.

Patients are less likely to deviate from treatment regimens if they have open communication with their health-care providers (9). If alternative medicine is an important issue for a patient, being able to discuss the advantages and disadvantages of various options with a health professional may be helpful. Thus, patients' interests might be well served if the topic of alternative therapies was added to health professions' curricula. Over 25 medical schools have elective courses in alternative medicine, and one has a fellowship in integrative medicine, using both alternative and traditional therapies (1). The British Medical Association has encouraged the incorporation of alternative therapies into undergraduate medical programs and accredited postgraduate curriculums (7), and the Medical Society of Nova Scotia also established a Complimentary Medicine Division (8).

The views of traditional providers have been the subject of several studies. A recent meta-analysis reviewed 12 publications which assessed physicians' perceived effectiveness of complimentary therapies (11). The studies were done in Europe, New Zealand, and Israel. While noting the wide variability among the studies, the authors concluded that complimentary medicine overall was perceived by physicians to be at least moderately efficacious. Another study, looking at physician referral patterns to complimentary practitioners, found that referral rates correlated positively with knowledge of alternative therapies and that general practitioners were most likely to refer patients to complimentary practitioners (12). In a survey of Canadian general practitioners, 83 percent of respondents agreed that complimentary medicine was useful, even though their reported knowledge of therapies was poor (13).

Nelson and colleagues conducted an inquiry among British and American pharmacists as to their knowledge and perceived usefulness of selected alternative therapies (14). The U.S. respondents were predominately male, with a mean age of 42 years, and most worked in a retail setting. Among the therapies where a majority of the U.S. pharmacists indicated they "knew something or knew a lot" were the following: acupuncture, biofeedback, chelation therapy, chiropractic, herbal remedies, holistic medicine, homeopathy, hypnosis, and megavitamins. Given the possible responses of "useful," "of no use," or "don't know," a majority of the respondents

regarded four of these therapies as useful: acupuncture, biofeedback, chiropractic, and hypnosis. However, the investigators questioned whether the low response rate among U.S. pharmacists (less than 20 percent) might have masked greater ignorance.

This study was undertaken to assess the knowledge and attitudes toward 20 alternative medical practices among pharmacy students and compare them with the knowledge and attitudes of osteopathic students. Osteopathy has become a respected area of medical study in the United States, with osteopathic physicians considered the same as medical doctors. Osteopathy's roots are in alternative therapy. Osteopathic students are taught to consider the patient's mental and musculoskeletal status during treatment. The art of the apothecary dates back to Biblical times, but today the profession of pharmacy is reliant on Western forms of therapy. Pharmacists have many opportunities to influence patients' self-medication and self-care patterns as well as compliance with prescribed therapies.

METHODS

Instrument. A questionnaire, modeled after previous surveys, was developed to evaluate students' perceived knowledge and usefulness of 20 alternative therapies (14,15). The therapies included acupuncture, aromatherapy, art therapy, biofeedback, chiropractic, cryotherapy, exercise therapy, herbal therapy, holistic medicine, homeopathy, imagery, macrobiotics, magnetic therapy, massage therapy, meditation, megavitamins, naturopathy, physical therapy, and psychotherapy. These topics were arbitrarily selected, after reviewing medical and lay literature, to reflect a variety of interventions with varying levels of use. The survey was pretested by four pharmacists for readability and face validity.

Knowledge of each alternative therapy was self-assessed by the respondent. Four response categories were available: 1. "never heard of," 2. "only heard of," 3. "know something about," and 4. "know a lot about." Perceived usefulness was evaluated with five response categories: 1. "of no use," 2. "somewhat useful," 3. "useful," 4. "very useful," and 5. "never heard of." The last category was not scored and was not included in the analysis of usefulness data.

Subjects. Test subjects were gathered from students at one school of pharmacy and one school of osteopathic medicine located in the same Midwestern city, Des Moines, Iowa. The highest levels of students, not yet participating in experiential rotations, were targeted because they had completed virtually the entire didactic portion of their respective curriculum. The questionnaires were hand-delivered to selected groups of students and were gathered immediately upon completion. Data were collected in 1995.

Data Analysis. Data were analyzed using the statistical program Statview (version 4.5). The data were analyzed via frequency distributions, chi-square analysis, and other tests appropriate for non-parametric data.

RESULTS

Completed surveys were received from 137 osteopathic students and 97 pharmacy students; respectively, these represented 90 and 99 percent of the surveys distributed. The mean age of pharmacy respondents was 24 years (ranging from 21 to 44 years), while the mean among osteopathic students was 28 years (ranging from 24 to 50 years). Pharmacy respondents were predominately female (65 percent of students), while males accounted for about the same proportion (62 percent) of osteopathic participants.

With respect to their self-assessed knowledge of the alternative therapies, Table 1 shows the proportion of students in each profession who indicated that they "knew something about" or "knew a lot about" each therapy (hereafter, the phrase "knew about" encompasses both categories). Over half of the students in both professional programs indicated they knew about eight therapies: acupuncture, chiropractic, exercise therapy, hypnotherapy, massage therapy, meditation, physical therapy, and psychotherapy. In addition, over half of the osteopathic students (but less than half of the pharmacy students) indicated they knew about biofeedback and holistic medicine, and over half of the pharmacy students knew about herbal remedies. Thus, for the remaining nine therapies, over half of the students in both programs rated their knowledge as "only heard of the therapy" or "never heard of the therapy"; these therapies included: aromatherapy, art therapy, cryotherapy, home-

TABLE 1. Percentage of Students in Each Profession Knowing "Something or a Lot About" Specified Alternative Therapies.*

Alternative Therapy	Pharmacy Students (n = 97)	Osteopathic Students (n = 137)	Difference (p)
Acupuncture	68.0	73.7	
Aromatherapy	18.6	18.2	
Art Therapy	13.4	21.2	
Biofeedback	27.8	93.4	<0.0001
Chiropractic	87.5	86.9	
Cryotherapy	12.4	38.0	<0.0001
Exercise Therapy	71.1	71.5	
Herbal Remedies	61.9	44.5	0.009
Holistic Medicine	23.7	83.2	<0.0001
Homeopathy	35.4	45.9	
Hypnotherapy	51.5	52.6	
Imagery	16.7	43.1	<0.0001
Macrobiotics	15.5	13.9	
Magnetic Therapy	13.8	9.5	
Massage Therapy	70.1	76.6	
Meditation	69.1	77.9	
Megavitamins	42.3	46.0	
Naturopathy	19.6	16.8	
Physical Therapy	87.6	94.2	
Psychotherapy	79.4	83.9	

*Defined as responding "know something about" or "know a lot about" (in contrast to "never heard of" or "only heard of" the therapy).

opathy, imagery, macrobiotics, magnetic therapy, megavitamins, and naturopathy. Using chi-square analysis, the professions were found to differ significantly ($p < 0.01$) on five therapies: biofeedback, cryotherapy, holistic medicine, imagery, and herbal remedies. More osteopathic students than pharmacy students rated themselves as knowing about the first four of these five, while more pharmacy students knew about herbal remedies.

Self-assessed knowledge of the alternative therapies was analyzed by gender. Within each profession, male and female students were compared. For two therapies, more female osteopathic students indicated they knew about the therapy than did male students ($p < 0.01$): aromatherapy (33.3% of females compared to 9.5% of males knew about it) and macrobiotics (27.5% of females compared to 6.0% of males knew about it). No differences in perceived knowledge were detected between male and female pharmacy students.

With respect to the usefulness of alternative therapies, the proportions of students in each program who rated each therapy as "useful" or "very useful" are shown in Table 2. (Respondents who had never heard of the therapy are excluded from this analysis and the table; the number of respondents for each therapy is shown in the table.) Over half of the respondents in both professions regarded four therapies as "useful" or "very useful": exercise therapy, massage therapy, physical therapy, and psychotherapy. In addition, over half of the osteopathic students (but less than half of the pharmacy students) rated four additional therapies as "useful" or "very useful": acupuncture, biofeedback, holistic medicine, and meditation. Over half of the pharmacy students rated chiropractic as "useful" or "very useful." Chi-square analysis revealed the two professions differed significantly ($p < 0.01$) in their assessed usefulness of seven therapies: acupuncture, biofeedback, chiropractic, holistic medicine, hypnotherapy, macrobiotics, and meditation. With the exception of chiropractic, these therapies were viewed as "useful" by a higher proportion of osteopathic students than pharmacy students.

The proportions of each profession who rated the therapies to be "of no use" are shown in Table 3. Over one-third of the respondents in each profession who had heard of the therapy or knew about it viewed aromatherapy and magnetic therapy as useless. Among pharmacy students, a similar proportion viewed cryotherapy as useless, while about one-third or more of the osteopathic students rated macrobiotics, megavitamins, and naturopathy as "of no use."

The relationship between knowledge and perceived usefulness was also explored. The distributions of usefulness ratings were compared for those with higher knowledge ("knowing something or a lot about the therapy") and those with less knowledge ("only

TABLE 2. Percentage of Students in Each Profession Rating Usefulness of Specified Alternative Therapies as "Useful" or "Very Useful."*

Alternative Therapy	Pharmacy Students	Osteopathic Students	Difference (*p*)
Acupuncture	38.0 (92)	59.6 (136)	0.001
Aromatherapy	10.9 (46)	10.3 (87)	
Art Therapy	26.3 (38)	39.1 (87)	
Biofeedback	34.5 (55)	66.9 (133)	<0.0001
Chiropractic	62.4 (93)	43.0 (135)	0.004
Cryotherapy	25.0 (32)	42.0 (88)	
Exercise Therapy	84.9 (93)	81.5 (130)	
Herbal Remedies	48.9 (94)	34.1 (132)	
Holistic Medicine	35.7 (56)	68.9 (135)	<0.0001
Homeopathy	25.9 (58)	34.5 (113)	
Hypnotherapy	22.8 (79)	48.8 (123)	0.0002
Imagery	22.0 (41)	44.1 (102)	
Macrobiotics	45.2 (31)	19.4 (72)	0.007
Magnetic Therapy	20.6 (34)	7.8 (77)	
Massage Therapy	58.9 (90)	71.9 (135)	
Meditation	44.1 (93)	69.6 (135)	0.0001
Megavitamins	26.3 (76)	23.5 (115)	
Naturopathy	30.8 (52)	15.3 (72)	
Physical Therapy	88.5 (96)	91.2 (137)	
Psychotherapy	81.3 (96)	78.4 (134)	

*Numbers in parentheses indicate the number of persons responding and excludes those who had not heard of the therapy or left the item blank.

heard of"). Again, those respondents who had "never heard of" the therapy were excluded from this analysis. For all therapies, those with the higher self-assessed level of knowledge were more likely to view the therapy as useful. For 18 of the 20 therapies, the difference was statistically significant with a probability less than 0.01; for the remaining two, the probability was less than 0.013. The

TABLE 3. Percentage of Students in Each Profession Rating Usefulness of Specified Alternative Therapies as "Of No Use."*

Alternative Therapy	Pharmacy Students	Osteopathic Students
Acupuncture	6.5 (92)	4.4 (136)
Aromatherapy	37.0 (46)	36.8 (87)
Art Therapy	23.7 (38)	12.6 (87)
Biofeedback	12.7 (55)	2.3 (133)
Chiropractic	1.1 (93)	13.3 (135)
Cryotherapy	34.4 (32)	15.9 (88)
Exercise Therapy	0.0 (93)	1.5 (130)
Herbal Remedies	10.6 (94)	15.2 (132)
Holistic Medicine	23.2 (56)	3.7 (135)
Homeopathy	19.0 (58)	17.7 (113)
Hypnotherapy	12.7 (79)	7.3 (123)
Imagery	19.5 (41)	10.8 (102)
Macrobiotics	16.1 (31)	31.9 (72)
Magnetic Therapy	35.5 (34)	53.2 (77)
Massage Therapy	3.3 (90)	2.2 (135)
Meditation	9.7 (93)	3.7 (135)
Megavitamins	14.4 (76)	41.7 (115)
Naturopathy	19.2 (52)	31.9 (72)
Physical Therapy	0.0 (96)	1.5 (137)
Psychotherapy	1.0 (96)	3.7 (134)

*Numbers in parentheses indicate the number of persons responding and excludes those who had not heard of the therapy or left the item blank.

results are summarized (using two levels of knowledge and usefulness) in Table 4.

The knowledge ratings of the pharmacy students were compared to the ratings of pharmacy practitioners. The latter were obtained from a sample of pharmacists, primarily in community practice, in a prior study reported in 1990 (14). Nine therapies were common to the two studies, and the question used to assess knowledge was

TABLE 4. Percentage of Students in Both Professions Rating Usefulness as "Useful" or "Very Useful" by Level of Knowledge.*

Alternative Therapy	"Only heard of"	"Know something or a lot about"
Acupuncture	24.2 (62)	60.8 (166)
Aromatherapy	6.5 (92)	19.5 (41)
Art Therapy	14.5 (83)	76.2 (42)
Biofeedback	21.6 (37)	66.2 (151)
Chiropractic	23.1 (26)	54.2 (202)
Cryotherapy	15.0 (60)	60.0 (60)
Exercise Therapy	61.7 (60)	90.8 (163)
Herbal Remedies	19.6 (107)	58.8 (119)
Holistic Medicine	21.4 (56)	74.8 (135)
Homeopathy	12.7 (80)	46.7 (91)
Hypnotherapy	29.8 (84)	44.9 (118)
Imagery	9.8 (71)	65.3 (72)
Macrobiotics	11.1 (72)	64.5 (31)
Magnetic Therapy	7.0 (86)	28.0 (25)
Massage Therapy	41.8 (55)	74.7 (170)
Meditation	27.3 (55)	69.2 (173)
Megavitamins	10.9 (92)	37.4 (99)
Naturopathy	15.5 (84)	35.0 (40)
Physical Therapy	65.0 (20)	92.5 (213)
Psychotherapy	60.0 (40)	83.7 (190)

*Numbers in parentheses indicate the number of persons responding and excludes those who had not heard of the therapy or left the item blank.

similar in both studies; therefore, a comparison was possible, although it may have been confounded by the effects of history. For six therapies, the proportion of practitioners who knew about the therapy (*i.e.,* knew something or knew a lot about it) exceeded the proportion of students in those categories by more than 20 percentage points. The therapies included: biofeedback (62% of practitioners *vs.* 28% of students), holistic medicine (53% *vs.* 24%), home-

opathy (56% *vs.* 35%), hypnotherapy (70% *vs.* 52%), and megavitamins (61% *vs.* 42%). The proportions of practitioners and students who knew about the remaining therapies were more similar: acupuncture (85% of practitioners *vs.* 68% of students), chiropractic (94% *vs.* 88%), herbal remedies (53% *vs.* 62%), and naturopathy (15% *vs.* 20%).

DISCUSSION

This study attempted to assess pharmacy students, in comparison to osteopathic students, with respect to their knowledge and their perceptions of the usefulness of various alternative therapies. Alternative therapies are increasingly accepted and sought by the lay public. The role of traditional or conventional providers, such as pharmacists, in advising patients or referring them to sources of alternative therapies remains ill-defined. However, a large gap in knowledge or beliefs between patient and providers may impair professional-patient relationships, if the patient feels that his or her beliefs and preferences are being ignored. Thus, the place of alternative medicine in the education of traditional providers is evolving.

This study suffers from several limitations. The samples were small and from one school of pharmacy and one school of osteopathic medicine. Knowledge and usefulness were self-reported by the respondents. Further, global measures of these variables were obtained for the therapy overall rather than knowledge of specific characteristics or perceived usefulness in specified patient situations.

Despite these limitations, several findings merit consideration or further attention. Knowledge and perceived usefulness were positively related; students with higher self-assessed knowledge of a therapy were more likely to view it as useful. We do not know which of these comes first: possibly increased knowledge leads to a more favorable view of usefulness; on the other hand, perhaps those inclined to view an alternative therapy as useful seek out more information about it.

Given the lack of norms about student knowledge of alternative therapies, judging the adequacy of the knowledge levels found in the survey is impossible. Nonetheless, a couple of points are of interest. Over half of each group had "only heard of" or "never

heard of" 9 of the 20 therapies. In other words, the majority of pharmacy and osteopathic students could not have given help or advice to their patients about these therapies. In neither profession was gender closely associated with knowledge of alternative therapies: gender differences were rare among osteopathic students and absent among pharmacy students.

Perceived usefulness of the alternative therapies was assessed among the students who, as a minimum level of knowledge, had heard of a therapy. In general, the results indicate ambivalence or uncertainty as to the usefulness of the alternative therapies. On the one hand, three-fourths of the students in each profession rated only three therapies as "useful" or "very useful" (exercise therapy, physical therapy, and psychotherapy). On the other hand, the alternative therapies were not commonly viewed as useless, either. Four therapies were viewed as "useless" by one-third or more of the respondents in one or both professions (cryotherapy among pharmacy students, megavitamins among osteopathic students, and aromatherapy and magnetic therapy among both). This is not a strong indication of disapproval.

In comparison, the two professions differed markedly on their self-assessed knowledge of two therapies: biofeedback (only 28% of the pharmacy students knew about it compared to 93% of the osteopathic students) and holistic medicine (24% of the pharmacy students *vs.* 83% of the osteopathic students). Similarly, among those students who knew something of these two therapies, the professions differed in their perceived usefulness of them, with osteopathic students more likely to view them as useful than pharmacy students. These two therapies were also noted when the knowledge levels of pharmacy students were compared to those of pharmacy practitioners obtained in an earlier study (14). For biofeedback and holistic medicine, the proportion of students who knew about them was 30-35 percentage points lower than the proportion of practitioners.

Given the differences in the domains of the two professions, their knowledge and perceptions of various alternative therapies might be complimentary. For instance, osteopathic students might be expected to be more knowledgeable of exercise therapy, massage therapy, and physical therapy, while pharmacy students might be expected to be

more knowledgeable of herbal remedies and megavitamins. A difference was noted only with herbal remedies, with more pharmacy students indicating they knew something or a lot about them. No differences were noted between the professions in the proportion viewing these as useful or very useful. However, with megavitamins, 42% of the osteopathic students viewed them as being useless, compared to 14% of pharmacy students. A final comparison of interest between the professions is that 13% of the osteopathic students viewed chiropractic as useless, versus 1% of the pharmacy students. This may reflect the similarity and possible economic competition between chiropractic and osteopathic medicine.

CONCLUSION

Alternative therapies are becoming more accepted and desired by the public. A working knowledge of all treatment options, including alternative therapies, allows providers to deliver more comprehensive patient care. The emphasis placed on alternative therapies in the education of health professionals, including pharmacists, is an issue that will be increasingly debated. The results of this study indicate that pharmacy and osteopathic students do not currently perceive themselves as very knowledgeable about alternative therapies, but they are neither strongly positive nor negative about the therapies' potential usefulness. Some differences between the professions were noted with respect to specific therapies, the most notable being biofeedback and holistic medicine.

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