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Knowledge, Attitudes, and Personal Use of Complementary and Alternative Medicine among Occupational Therapy Educators in the United States

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ABSTRACT. The purpose of this study was to establish a baseline description of American occupational therapy educators' knowledge, attitudes, and personal use of complementary and alternative medicine (CAM) as a first step in exploring the larger issue of future occupational therapy practitioners' preparedness for meeting clients' occupational needs in today's evolving healthcare environment. Results of this cross-sectional survey highlighted limitations of occupational therapy educators' knowledge of common CAM concepts and therapies across all demographic variables, varying attitudes towards CAM in general and its inclusion in occupational therapy education, and personal use of common CAM therapies. Without increased occupational therapy educator knowledge about CAM and engagement in the current healthcare practices, occupational therapy practitioners are at risk for having a limited role in integrative healthcare.

KEYWORDS. Attitudes, complementary and alternative medicine, knowledge, occupational therapy educators, personal use

According to the most recent National Health Survey data, complementary and alternative medicine (CAM) is being used by almost 40% of adults and 12% of children in the United States (Barnes et al., 2008). Increasing popularity and greater acceptance of CAM in the United States is largely in response to the demands of health care consumers and market forces (Bruguier, 2008; Johnson et al., 2008; Pearson & Chesney, 2007). Special populations, such as individuals with chronic medical conditions or functional limitations, use CAM therapies more than others in the general population (Carlson & Krahn, 2006; Okoro et al., 2012; Saydah & Eberhardt, 2006; Wells et al., 2010).

CAM is broadly defined as a group of health systems, practices, and products that are not considered conventional or mainstream medicine that individuals use for the purposes of preventing or treating health conditions

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(National Center for Complementary and Alternative Medicine [NCCAM], 2014). According to NCCAM (2014), a complementary approach refers to practices and products that are used in conjunction with conventional medicine, while an alternative approach refers to practices and products that are used in place of conventional medicine. Historically CAM services were labeled complementary or alternative, but emerging models of healthcare addressing specific clinical conditions blur these definitions depending on how the CAM services are used in relation to conventional medicine (Dayhew et al., 2009; “White House Commission”, 2002). Integrative medicine is an evolving healthcare model that offers complementary services alongside conventional medicine and is growing in popularity among providers and healthcare systems who perceive that CAM improves one’s general sense of well-being, despite a lack of reliable data about its efficacy (NCCAM, 2014).

Professional healthcare education programs have begun to adapt to the changing demands in healthcare. As of 2014, approximately 40% of medical schools in the United States have integrative medicine programs and are members of the Consortium of Academic Health Centers for Integrative Medicine, a group that advances the principles and practices of integrative healthcare within medical institutions (“Association of American Medical Colleges”, 2014; “Consortium of Academic Health”, 2014). Curricular inclusion of CAM content was described in the literature for allied health professions such as physical therapy (Geigle & Galantino, 2009), nursing (Richardson, 2003), nurse practitioners (Nottingham, 2006), and physician assistants (Lloyd et al., 2007), but not occupational therapy.

Occupational therapy practitioners empower individuals of all ages to engage in meaningful occupations using a holistic treatment approach which is philosophically aligned with the holistic paradigm employed by many CAM professionals (American Occupational Therapy Association [AOTA], 2014a; Barrett et al., 2003). Occupational therapy educational programs provide learning opportunities to develop content knowledge for future occupational therapy practitioners by emphasizing critical thinking in preparation for dynamic and diverse healthcare environments and society (AOTA, 2007b; AOTA, 2009; AOTA, 2010). The Accreditation Council for Occupational Therapy (ACOTE) provides educational standards that outline required student learning outcomes for graduates from accredited programs, however leaves curricular design to the individual programs (ACOTE, 2012). Consequently, occupational therapy educators are integral in the development of curricula that meets ACOTE’s student learning outcomes, as well as delivering informed and current curricular content. Currently ACOTE does not require the inclusion of CAM content in occupational therapy curricula.

Although inclusion of CAM is not mandated by ACOTE, the AOTA published a position paper on CAM recognized the importance of addressing issues surrounding use of CAM within occupational therapy practice and outlined how CAM can be used appropriately by occupational therapy practitioners (AOTA, 2011). Specifically, the position paper states that “Occupational therapy practitioners may utilize CAM in the delivery of occupational therapy services when they are used as preparatory methods or purposeful activities to facilitate the ability of clients to engage in their daily life occupations” (AOTA, 2011, p. S27).

Emerging examples of the inclusion of CAM to address physical, psychosocial, and spiritual needs for clients of various ages in occupational therapy practice have appeared in the literature. For example, yoga has been by occupational therapy practitioners to mitigate symptoms from chronic conditions such as pain, anxiety, depression, excessive muscle tone, muscle tightness, and edema in adults to maladaptive behaviors for children on the autistic spectrum (Brachtesende, 2005; Chugh-Gupta et al., 2013; Kluge, 2004; Koenig et al., 2012; Sabel & Gallagher, 2007). Reiki and tai chi have been used for stress reduction, pain relief, and relaxation (Brachtesende, 2005; McCormack & Gupta, 2007) and aromatherapy was used for various conditions from relaxation and decreasing muscle tension to coping with anxiety, depression, or other mental diagnoses (Ford, 2005). Overall, these CAM therapies were used to support occupational therapy clients' to full participation in and find contentment with their personal occupational roles (Brachtesende, 2005; Chugh-Gupta et al., 2013; Ford, 2005; Kluge, 2004; Koenig et al., 2012; McCormack & Gupta, 2007; Sabel & Gallagher, 2007).

Despite growing use of CAM and its inclusion in many professional healthcare educational programs in the United States, in most studies of healthcare professionals' and educators' knowledge about CAM, survey respondents rated their own knowledge (Anderson, 2009; Baugniet et al., 2000; Kim et al., 2006; Mildren & Stokols, 2004; Rosenbaum et al., 2002; Wahner-Roedler et al., 2006). Two exceptions objectively measured knowledge about CAM. Koh and colleagues (2003) examined pharmacists' knowledge about CAM using a 10 question quiz on the use and adverse effects related primarily to herbal medicine in addition to respondents rating their own knowledge about CAM. Results revealed a mean percentile score for correct answers on the quiz was 72%. Almost half of respondents (49%) reported not knowing much about CAM, and 81% of respondents reported inadequate knowledge for counseling patients about CAM.

Johnson and colleagues (2008) studied general health educators' knowledge of basic CAM concepts and CAM therapies based on definitions and categories provided by NCCAM in 2005. Respondents included health educators in various settings, such as medical care facilities, colleges and universities, and professional preparation, among others (Johnson et al., 2008). Results revealed health educators were more knowledgeable about more widely used CAM therapies such as massage therapy, chiropractic, and daily vitamins excluding megavitamins or vitamins prescribed by doctor than those that are infrequently used such as Qi Gong, Reiki, and Ayurveda (Johnson et al., 2008). These findings are similar to those found in other studies where knowledge of CAM therapies was self-reported (Anderson, 2009; Kim et al., 2006; Mildren & Stokols, 2004; Rosenbaum et al., 2002; Wahner-Roedler et al., 2006; Wong et al., 2010).

Several studies have identified a link between knowledge, attitudes, and perceived usefulness of CAM. Baugniet and colleagues (2000) found that increased knowledge among occupational therapy, physiotherapy, nursing, pharmacy, and medical students correlated to a stronger belief that CAM was useful. Anderson (2009) found significant correlations between positive attitudes, levels of knowledge, and perceptions of usefulness of CAM in occupational therapy practice. Rosenbaum and colleagues (2002) found increased knowledge about CAM among academic physician's increased perceived usefulness of and referrals for CAM. Lee

and colleagues (2007) found faculty development focusing on increasing awareness, interest, and knowledge to be a key strategy to increase educators' knowledge about CAM. This was accomplished through lectures, journal clubs, and experiential learning opportunities, among others (Lee, et al., 2007).

While student and practicing healthcare providers' attitudes towards CAM and their use of CAM were widely described in the literature (Baugniet et al., 2000; Hart, 2009; McFadden et al., 2010; Milden & Stokols, 2004; Nowak & Hale, 2012; Sewitch et al., 2008; Zhang et al., 2010), descriptions of healthcare educators' attitudes and use was less prevalent. Johnson et al. (2010) found health educators generally had positive attitudes toward basic CAM concepts and CAM therapies and about 90% of respondents personally used at least one form of CAM in the 12 months prior to taking the survey. Kreitzer and colleagues (2002) found more than 90% of the surveyed medical, nursing, and pharmacy faculty expressed positive attitudes toward CAM and supported the integration of CAM into conventional practices. Nursing faculty reported that they personally used or would be open to using CAM more than medical or pharmacy faculty. Avino (2011) described nursing faculty to have positive attitudes towards CAM in general and 80% of the faculty had personally used CAM. Although a baseline for knowledge, attitudes, and personal use of CAM was described for general health educators and for select healthcare professions, there was a paucity of literature establishing this baseline for occupational therapy educators. Therefore, the purpose of this study was to provide a baseline description of American occupational therapy educators' knowledge, attitudes, and personal use of CAM as a first step in exploring the larger issue of future occupational therapy practitioners' preparedness for meeting clients' occupational needs in today's evolving healthcare environment. Specifically, four research questions were posed: (1) What demographic variables, if any, were related to occupational therapy educators' knowledge of CAM, (2) what are occupational therapy educators' general attitudes toward CAM, (3) what are occupational therapy educators' attitudes specifically toward CAM and occupational therapy education, and (4) what are the most common CAM therapies personally used by occupational therapy educators in the 12 months preceding the completion of the survey?

METHODS

Design and Sample

An exploratory, cross-sectional survey design was used for this study. This study was approved by the Review Board for Human Subjects Research at the Ithaca College and informed consent was obtained from all respondents. Occupational therapy educators employed at accredited colleges in the United States as of October, 2011 were targeted for this study ($n = 1,731$). All respondents were required to be registered and licensed occupational therapy practitioners with a minimum of 2 years of full-time teaching experience. Respondents who had read "A Survey of Complementary and Alternative Medicine Knowledge among Health Educators in the United States" by Johnson et al. (2008) were excluded because the correct answers for the knowledge questions were published therein.

Data Collection

Data were collected using SurveyMonkey[®], an online survey software and questionnaire tool. A modified version of the Johnson et al. (2008) survey was used with permission from the authors. Modifications include substituting “occupational therapy educators” for “health educators” in all applicable questions, replacing “area of practice” for a question regarding participant employment settings, and the addition of four questions specifically assessing attitudes toward CAM and occupational therapy. Demographic questions were modified to include geographical location, years of experience, primary area of expertise, highest degree of education in occupational therapy, and respondents’ age in years. A question was added to determine if the reader was familiar with the Johnson et al. (2008) article.

The modified survey instrument included six basic CAM concept items and 10 common CAM therapy items for assessing occupational therapy educators’ knowledge of CAM, 15 items assessing general attitudes toward CAM, four questions specifically assessing attitudes toward CAM and occupational therapy, and 31 items assessing use of various CAM therapies within the preceding 12 months. Content validity of the original survey was established by a panel of experts in CAM research and practice and pilot-testing (Johnson et al., 2008; Johnson et al., 2010).

Procedure

The AOTA website identified 308 accredited occupational therapy assistant, master, and doctorate programs in the United States for the 2011–2012 academic year (AOTA, 2014b). Email addresses were obtained for all occupational therapy educators from program websites. In cases where faculty email addresses were not listed, program directors were asked to forward the survey to all current educators in their program. Initial emails consisted of a description of this study and a link to the online survey created in SurveyMonkey[®]. Reminder emails were sent to all occupational therapy educators two to three weeks after the initial email. A total of 1,794 occupational therapy educators were emailed and 73 were returned as non-deliverable, resulting in 1,731 valid emailings. The number of emails forwarded to colleagues by program directors is unknown, which prevented a precise number of possible respondents.

Data Analysis

Spearman Rho correlations were calculated between correct score on the knowledge questions and demographics variables to address the first research question. Descriptive statistics for proportions with a 95th confidence interval were reported for knowledge and attitude survey responses to answer the remaining research questions. SPSS, version 19.0, was used for all data analyses.

RESULTS

Demographic characteristics of the respondents are detailed in Table 1. Respondents for this study are generally representative of OT educators in the United States (AOTA, 2007a).

TABLE 1. Demographic Characteristics of Respondents

Characteristic	<i>n</i>	%
Sex		
Female	351	87
Male	55	14
Professional status		
OTR	324	93
COTA	26	7
Highest degree		
Associate in OT	11	3
Bachelor in OT or other discipline	18	4
Master in OT or other discipline	146	33
Doctor in OT	90	21
Non-OT related doctorate, academic	100	23
Non-OT related doctorate, clinical	41	9
Race or ethnicity		
Black	9	2
Asian or Pacific Islander	12	3
Hispanic	13	3
Multiracial	2	1
Native American	1	0
White	358	89
Other	9	2
Region of the USA		
West	43	11
Midwest	121	31
South	121	31
Northeast	103	26
Pacific	4	1
Employment setting		
OT assistant program	93	24
OT masters program, entry level	223	57
OT masters program, post professional	12	3
OT doctoral program, entry level	9	2
OT doctoral program, post professional	5	1
Multiple settings	47	12
Primary Area of Expertise		
Children and youth	87	22
Health and wellness	25	6
Mental health	61	16
Productive aging	34	9
Rehabilitation, disability and participation	169	43
Work and industry	15	4
Read Johnson et al. (2008)		
Yes	24	6
No	367	94

CAM Knowledge

Responses for each of the knowledge questions were considered correct based on the answers provided by Johnson, et al. (2008). The percentage of “don’t know” responses were recorded for each question and excluded from the percent correct calculations. Table 2 details CAM knowledge results. Of the six basic CAM concepts, occupational therapy educators were most knowledgeable about general definition, scientific evidence regarding effectiveness, and evidence about the safety

TABLE 2. CAM Knowledge Results

Knowledge item	% Correct Responses	% Incorrect Responses	% Don't Know Responses
Basic CAM Concepts (<i>n</i> = 354)			
1. Research shows that acupuncture is beneficial in treating a variety of health conditions. (True)	76 [72,80]	2 [1,3]	22 [18,26]
2. CAM is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. (True)	81 [77,84]	9 [6,11]	11 [8-14]
3. Sufficient scientific evidence exists regarding the safety of all CAM therapies. (False)	64 [60,69]	7 [4,9]	29 [25,33]
4. Sufficient scientific evidence exists regarding the effectiveness of all CAM therapies. (False)	68 [64,72]	5 [3,7]	27 [23,31]
5. Using a special diet to treat cancer instead of undergoing surgery, radiation, or chemotherapy that has been recommended by a conventional doctor is an example of alternative medicine. (True)	51 [46,56]	25 [21,29]	23 [19,27]
6. Using aromatherapy to help lessen a patient's discomfort following surgery is an example of alternative medicine. (False)	9 [6,12]	81 [77, 85]	11 [8,14]
Common CAM Therapies (<i>n</i> = 348)			
7. Massage therapists manipulate muscle and connective tissue to enhance function of those tissues and promote relaxation and wellbeing. (True)	96 [94,98]	1 [0-2]	3 [1-5]
8. Chiropractic use hands-on manipulative therapy as an integral treatment tool. (True)	97 [95,99]	0 ^a	3 [1,5]
9. Under the Dietary Supplement Health and Education Act (DSHEA) of 1994, dietary supplements are considered drugs and, therefore, their labeling requirement is the same as that for drugs. (False)	59 [54,64]	15 [12,18]	26 [22,30]
10. In homeopathic medicine, there is a belief that small, highly diluted quantities of medicinal substances are given to cure symptoms, and when the same substances are given at higher or more concentrated doses, they would actually cause those symptoms. (True)	39 [34,44]	6 [4,8]	56 [51,61]
11. Ayurveda has been practiced primarily in Japan for 5,000 years. (False)	29 [25,33]	13 [10,16]	58 [53,63]
12. In naturopathic medicine, there is a belief that "like cures like." (False)	8 [5,11]	25 [21,29]	67 [63,71]
13. Osteopathic medicine practices may include dietary modifications, massage, exercise, acupuncture, minor surgery, and various other interventions. (False)	8 [5,11]	70 [66,74]	22 [18,26]
14. Reiki is a component of traditional Chinese medicine. (False)	20 [16,24]	44 [34,44]	36[32,40]
15. Qi Gong is based on the belief that when spiritual energy is channeled through a Qi Gong practitioner, the patient's spirit is healed, which in turn heals the physical body. (False)	8 [5-11]	39 [43-44]	54 [48,58]
16. Therapeutic touch is based on the premise that it is the healing force of the therapist that affects the patient's body. (True)	62 [57-67]	19 [15-23]	19 [15-23]
	Average Correct: 48%	Average Incorrect: 23%	Average Don't Know: 29%

Note. 95% confidence interval is displayed in brackets.

^aCI is ± 1 count.

of CAM therapies. In addition, occupational therapy educators scored the highest percentage correct for questions about chiropractic, massage therapy, and therapeutic touch. Respondents scored the lowest on questions about naturopathic and osteopathic medicine.

Knowledge measurement items were also analyzed by highest educational degree, employment setting, and region of the United States. There were unequal numbers of respondents in many demographic categories. However, occupational therapy educators with nonoccupational therapy academic doctorate degrees had greater knowledge about the benefits of acupuncture research than respondents with other degrees. The level of academic degree did not impact the knowledge measurement items for any other CAM concept or CAM therapies.

Attitudes about CAM

General attitudes about CAM and specific attitudes towards occupational therapy and CAM in education were collected using five point Likert scale. Responses represent a range of attitudes, from positive to negative as detailed in Table 3. Attitudes specifically toward CAM and occupational therapy education were more divisive than attitudes toward CAM in general.

CAM Use by Occupational Therapy Educators

In the 12 months preceding the survey, five CAM therapies were used by more than half of the respondents: (1) daily vitamins that exclude megavitamins or vitamins prescribed by a doctor; (2) massage; (3) exercise that was not for the purpose of managing weight; (4) relaxation techniques such as meditation; and (5) prayer/spiritual healing by others. Table 4 provides a detailed summary of CAM use by occupational therapy educators.

DISCUSSION

Although it was difficult to compare knowledge between studies due to content variations, occupational therapy educators' knowledge about CAM was similar to previous studies for being most knowledgeable about the general definition of CAM and commonly used CAM therapies and least knowledgeable about less commonly used CAM therapies (Anderson, 2009; Bagniet et al., 2000; Kim et al., 2006; Johnson et al., 2008; Wahner-Roedler et al., 2006). Two thirds of responding occupational therapy educators thought that their peers were knowledgeable about CAM, when the actual overall mean score (48%) for the knowledge items suggests otherwise. This represents a discrepancy between perceived knowledge and actual knowledge about CAM that could not be explained by the demographic variables used in this study. It is currently unknown how occupational therapy educators developed their knowledge about CAM given the lack of formal education on the topic and how recently CAM has entered conventional medicine practices. Without formal education on CAM, occupational therapy educators likely gain knowledge through potentially biased, informal or self-directed learning opportunities, such as continuing education courses, mass media, word of mouth from peer professionals or other healthcare providers, the internet, or by personal experience with CAM

TABLE 3. Level of Agreement with Statements about CAM

Attitude Item	Level of Agreement				
	% Strongly disagree	% Disagree	% Neither agree or disagree	% Agree	% Strongly Agree
Attitudes Towards CAM (n = 340)					
1. CAM physicians have more time for their patients than conventional physicians.	1 [0,2]	5 [3,7]	45 [40,50]	42 [37,48]	7 [4,9]
2. CAM therapies can help patients cope better with their disease.	2 [0,3]	2 [1,3]	31 [26,36]	52 [47,57]	13 [9,17]
3. CAM therapies have fewer side effects than conventional therapies.	1 [0,2]	9 [6,12]	42 [37,47]	41 [36,46]	7 [4,10]
4. CAM provides more cost-effective treatment than conventional medicine.	3 [1,5]	12 [9,15]	58 [53,63]	24 [19,29]	4 [2,6]
5. Conventional medicine should be the first line of treatment before CAM.	6 [3,8]	16 [12,20]	49 [44,55]	25 [21,30]	4 [2,6]
6. Conventional therapies improve my health better than CAM.	4 [2,6]	21 [17,25]	56 [51,61]	18 [14,22]	2 [0-3]
7. CAM is more art than science.	2 [0,3]	25 [20,30]	41 [36,46]	29 [24,34]	4 [2,6]
8. CAM is fairly unscientific and imprecise.	2 [0,3]	17 [13,21]	34 [29,39]	42 [37,47]	7 [4,10]
9. CAM therapies not tested in a scientific manner should be banned.	1 [0,2]	9 [6,12]	33 [28,38]	43 [38,48]	14 [10,18]
10. CAM is mostly questionable.	0 ^a	7 [4,10]	33 [28,38]	44 [39,49]	16 [12,20]
11. The results of CAM are in most cases due to a placebo effect.	1 [0,2]	5 [3,7]	39 [34,44]	40 [35,45]	16 [12,20]
12. There is no evidence that CAM is safe.	1 [0,2]	4 [2,6]	29 [24,34]	53 [48,58]	14 [10,18]
13. CAM is only effective in treating minor complaints and injuries.	0 ^a	4 [2,6]	32 [27,37]	50 [45,55]	14 [10,18]
14. Patients on CAM rarely get better.	0 ^a	0 ^a	27 [22,32]	54 [49,59]	19 [15,23]
15. CAM is a threat to public health.	0 ^a	1 [1,2]	16 [12,20]	48 [43,53]	35 [30,40]
Attitudes Towards CAM and OT Educators (n = 340)					
1. Occupational therapy educators should be able to discuss commonly used CAM methods with their clients or students.	16 [12,20]	54 [49,59]	22 [18,26]	7 [4,10]	1 [0,2]
2. CAM should be included in occupational therapy education curriculum.	10 [7,13]	43 [38,48]	30 [25,35]	14 [10,18]	3 [1,5]
3. Knowledge of CAM is important to me as an occupational therapy educator.	12 [9,15]	51 [46,56]	26 [21,31]	9 [6,12]	3 [1,5]
4. Most occupational therapy educators are knowledgeable about CAM.	0 ^a	8 [4,10]	25 [20,30]	59 [54,64]	8 [5,11]

Note. 95% confidence interval is displayed in brackets.

^aCI is ± 1 count.

TABLE 4. Use of CAM by Occupational Therapy Educators

CAM Therapy	Used CAM Therapy?	
	% Yes	% No
Daily vitamin use excluding megavitamins or vitamin prescribed by a doctor	68 [63,73]	32 [27,37]
Massage	60 [55,65]	40 [35,45]
Exercise that is not for the purpose of managing weight	70 [65,75]	30 [25,35]
Relaxation (such as meditation)	65 [60,70]	35 [30,40]
Herbs/Medicinal Teas	47 [42,52]	53 [48,58]
Aromatherapy	31 [26,35]	70 [65,74]
Yoga	43 [38,48]	57 [52,62]
Prayer/Spiritual Healing by others	51 [46,56]	49 [44,54]
Guided Imagery	41 [36,46]	60 [55,65]
Chiropractic	16 [12,20]	84 [80,88]
Mineral Supplements	33 [28,37]	68 [63,72]
Acupressure	18 [14,22]	82 [78,86]
Special diet that is not for the purpose of managing weight	21 [16,25]	79 [75,84]
Folk remedies	18 [14,22]	82 [78,86]
Biofeedback	7 [4,9]	94 [91,96]
Acupuncture	10 [7,14]	90 [86,93]
Megavitamins excluding a daily vitamin prescribed by a doctor	18 [14,22]	82 [78,86]
Reflexology	12 [9,16]	88 [84,91]
Tai chi	16 [12,20]	84 [80,88]
Therapeutic touch	18 [14,22]	82 [78,86]
Homeopathy	13 [9,17]	87 [83,91]
Reiki	11 [8,14]	89 [86,92]
Osteopathy	5 [3,8]	95 [92,97]
Magnets	4 [2,7]	96 [93,98]
Qi Gong	7 [5,10]	93 [90,95]
Ayurveda	5 [3,7]	95 [93,97]
Hypnosis	3 [1,4]	97 [96,99]
Naturopathy	5 [3,8]	95 [92,97]
Traditional Chinese Medicine	7 [4,9]	94 [91,96]
Energy emitting machines	2 [0,3]	99 [97,100]
Chelation	1 [0,2]	99 [98,100]

Note. *n* = 338. 95% confidence interval is displayed in brackets.

therapies. Greater knowledge of common CAM concepts and therapies among respondents support this hypothesis.

Occupational therapy educators had varied attitudes toward CAM, which differs from the generally positive attitudes reported in other healthcare professions (Avino, 2011; Baugniet et al., 2000; Johnson et al., 2010; Kreitzer et al., 2002; Milden & Stokols, 2004; Zhang et al., 2010). Concepts related to the nonphysical effects of CAM elicited positive or neutral attitudes and is consistent with the holistic philosophical background of occupational therapy. Most of the respondents noted a lack of scientific evidence on quality, safety, and efficacy of CAM therapies, showing respondents valued evidence-based practice. The vast majority of respondents believe CAM to be a threat to public health, indicating a strongly negative attitude

toward CAM. It is unclear if these perceptions were based on a review of the literature, informal learning, personal experience, or on perception alone.

Occupational therapy educators were more similar in their attitudes toward CAM and occupational therapy education than their attitudes towards general CAM concepts and therapies. Few respondents thought knowledge about CAM was important as an educator or thought it would be appropriate to have discussions about commonly used CAM methods with clients or students. Less than half of the respondents thought content about CAM should be included in occupational therapy education curriculum. These results contradict previous studies where educators and health professionals voiced the need for curricular inclusion of CAM and the ability to advise clients or students about CAM (Anderson, 2009; Johnson et al., 2010; Kim et al., 2006; Koh, et al., 2003; Kreitzer et al., 2010; Sewitch et al., 2008; Wahner-Roedler et al., 2006; Zhang et al., 2010). Future research exploring attitude development among occupational therapy educators would be valuable given the influence occupational therapy educators have over curricular development and content delivery in occupational therapy professional education programs.

All of the CAM therapies surveyed were personally used by participating occupational therapy educators, each to varying degrees. The most commonly personally used CAM therapies included exercise for purposes other than weight management, daily vitamins excluding megavitamins or those prescribed by a doctor, relaxation such as meditation, massage, and prayer or spiritual healing by others. These results suggest that respondents personally used CAM services in a holistic way, meaning they were caring for their own mind, body, and spirit. It is possible that the occupational therapy educators who participated in this research do not perceive these health practices as being complementary or alternative, but a part of their general health and wellness practices.

Implications for Occupational Therapy Education

This study describes the knowledge, attitudes, and personal use of CAM among occupational therapy educators in the United States as a starting point for exploring the preparedness of future occupational therapy practitioners for meeting occupational needs of clients in a healthcare system that includes CAM. Without adequate knowledge of CAM, occupational therapy educators are at a disadvantage when teaching future occupational therapy practitioners about current trends in healthcare that includes CAM. If there are knowledge gaps among occupational therapy educators about CAM and its integration with conventional medicine, students may not be adequately prepared to enter the workforce. Increasing occupational therapy educators' knowledge on the topic of CAM and healthcare trends, such as integrative medicine, could be an important step forward for positively affecting change in occupational therapy educators attitudes towards CAM and subsequently the preparedness of future occupational therapy practitioners. This study begins to fill the gap in the literature by establishing a baseline description of participating occupational therapy (OT) educators' knowledge, attitudes, and personal use of CAM and uncovered knowledge gaps and attitudes towards CAM that might have important implications in the classroom and in practice.

Study Limitations

This study used a nonprobability sample of convenience, which may limit external validity to nonparticipating occupational therapy educators. The number of survey emails forwarded by program directors to faculty was not tracked, eliminating the ability to determine the total number of sent emails or an accurate response rate. Responses were not equitable for several of the demographic variables, resulting in limited comparability between groups. Although respondents who read the Johnson et al. (2008) article were directed to exit the survey, it is possible that those respondents may have continued on to complete the survey.

Future Research

Further research is needed to explore how occupational therapy educators learn about CAM and current healthcare trends in the absence of formal occupational therapy educational programs. Given the paucity of literature about CAM in occupational therapy education, a description of the current curricular inclusion of CAM content in occupational therapy programs is needed. Once this information is available, developing effective strategies to reduce knowledge gaps could be created. Research exploring how occupational therapy educators develop their attitudes about CAM could identify potential barriers that influence curricular development and content delivery. Identifying student knowledge, attitudes, and personal use of CAM could provide insight into the effects occupational therapy educators' may have on students' mindset about CAM and evolving healthcare models. Studies looking at knowledge, attitudes, personal use, and clinical use of CAM among occupational therapy practitioners could be used inform occupational therapy educators and policy makers about potential ethical and pragmatic issues surrounding CAM in occupational therapy practice.

CONCLUSION

Educators knowledge, attitudes, and personal use of CAM, and the potential interaction of the three, might have unintended consequences for occupational therapy students. Educators are gatekeepers of curricular content and the inclusion of CAM has the potential to impact students' knowledge and attitudes of CAM. More knowledgeable and open-minded occupational therapy educators can only elevate the educational experience of students who will be called upon work with clients who use CAM therapies once they are licensed occupational therapy practitioners. Preparing future practitioners to respect client-centered healthcare values of a diverse client population, have informed conversations about CAM therapies, and make appropriate referrals to CAM providers upholds the holistic and theoretical foundation of the occupational therapy profession. Without increasing occupational therapy educators' knowledge about and engagement in the current healthcare practices, occupational therapists are at risk for having a limited role in integrative healthcare. This would be a missed opportunity, given the common

holistic philosophical backgrounds of occupational therapy and many CAM therapies.

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