

## RESEARCH

# Pharmacy Competencies for Interprofessional Integrative Health Care Education

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**Objective.** To address the gap in evidence-based knowledge among pharmacy students and practicing pharmacists regarding complementary and integrative health approaches due to insufficient education and a lack of standardized training.

**Methods.** The National Center for Integrative Primary Healthcare (NCIPH) developed 22 pharmacy competencies linked to a set of 10 interprofessional “metacompetencies” in integrative health care.

**Results.** The NCIPH pharmacy competencies are well-aligned with the current educational standards and Center for the Advancement of Pharmacy Education (CAPE) outcomes for pharmacy programs. Therefore, the NCIPH competencies may provide a foundation for the incorporation of interprofessional integrative health care education into pharmacy curricula.

**Conclusion.** The NCIPH pharmacy competencies in integrative health care, linked to the interprofessional “metacompetencies,” are aligned with educational standards and outcomes, and may serve as a basis for pharmacy curriculum.

**Keywords:** integrative health care, pharmacy competencies, pharmacy education

## INTRODUCTION

More Americans now use complementary and integrative health care than ever before. According to the 2012 National Health Interview Survey (NHIS) conducted by the National Center for Complementary and Integrative Health (NCCIH) and Center for Disease Control and Prevention (CDC), the use of many complementary and integrative approaches for health significantly increased between 2007 and 2012 in the United States.<sup>1</sup> The key findings from the NHIS revealed widespread use of natural products (dietary supplements outside of vitamins and minerals) along with mind and body practices (eg, yoga, meditation, chiropractic services).<sup>2</sup> An estimated 59 million Americans spend \$30.2 billion annually out-of-pocket on natural products and mind-body practices.<sup>2</sup> The out-of-pocket spending ranked highest for complementary practitioner visits (\$143.7 billion, nearly 30% of what was spent on conventional physician services), followed by natural products (\$12.8 billion, 24% of the out-of-pocket amount spent on prescription drugs) and self-care approaches, such as homeopathic medicine

and self-help materials (\$2.7 billion).<sup>3</sup> As family income increased, out-of-pocket spending on complementary approaches also increased.<sup>3</sup>

When describing non-conventional approaches to health, the terms “alternative,” “complementary,” and “integrative” have been used interchangeably. However, these nomenclatures have varying definitions. While “alternative” approaches refer to nonconventional strategies used in place of conventional interventions, “complementary” approaches refer to nonconventional strategies used together with conventional interventions.<sup>2</sup> Complementary approaches are much more commonly used than alternative approaches in the U.S. In turn, the term “integrative,” which means bringing together conventional and complementary approaches in a coordinated way, is now gaining use.<sup>2</sup> The Office of Alternative Medicine (OAM), established within the National Institute of Health (NIH)’s Office of the Director in 1992, was elevated and established as a National Center for Complementary and Alternative Medicine (NCCAM) in 1998 to evaluate complementary and alternative health interventions.<sup>4</sup> Recognizing that true alternative practices are rare and to promote the coordinated bridging of complementary practices to conventional care, the center changed its name to the National Center for Complementary and Integrative Health (NCCIH) in 2014.<sup>4</sup> In general, “complementary approaches” should

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be used when referring to nonconventional practices and products for health, and “integrative health” used when referring to incorporation of complementary approaches together with conventional care.<sup>2</sup> Thus, pharmacy education should focus on complementary and integrative health.

Broadly, complementary approaches for health can be divided into two groups: natural products and mind and body practices.<sup>2</sup> Table 1 illustrates these two groups and components within each broad approach, along with other whole system practices that are outside the two groups.<sup>2,5</sup> Whole system practices involve complete systems of theory and practice that maximize patients’ ability to achieve physical and mental health.<sup>5</sup> Since 2002, NHIS consistently showed that the most commonly used complementary health approach has been natural products.<sup>6</sup> The top 10 most commonly used complementary approaches by US adults in 2012 were: natural products, deep breathing, yoga, tai chi, or qi gong, chiropractic or osteopathic manipulation, meditation, massage, special diets, homeopathy, progressive relaxation, and guided imagery.<sup>2</sup> Among the natural products, fish oil was most commonly used by adults.<sup>6</sup> The use of fish oil, probiotics and melatonin increased from 2007 to 2012.<sup>6</sup> The natural products were most often used for wellness, but also to reduce stress, improve sleep, or feel better emotionally.<sup>6</sup> Similar reasons were reported by people using mind and body practices.<sup>6</sup> The most recent market research report on vitamin and supplement manufacturing in the US presented the supplement market as an \$18 billion industry with a yearly growth rate of approximately 5%.<sup>7</sup>

Compared with medicine and nursing, in which the field of integrative health has matured over the past 20 years, pharmacy education lags in terms of having established competencies and standards. More than 40% of medical schools in the U.S. are members of the Academic Consortium for Integrative Medicine and Health.<sup>8</sup> The Society of

Teachers of Family Medicine approved 19 integrative medicine competencies for Family Medicine Residency programs in 2010.<sup>8</sup> A national board certification in integrative medicine that requires fellowship training was established in 2013.<sup>9</sup> In nursing, the American Nurses Association and American Holistic Nurses Association have established the scope and standards of holistic nursing.<sup>10-12</sup>

Although competencies and content criteria for integrative health care have not been identified by the Accreditation Council on Pharmacy Education (ACPE), the National Association of Boards of Pharmacy (NABP) has established guidelines on natural products competency in the North American Pharmacist Licensure Examination (NAPLEX).<sup>13</sup> A 2003 study found that teaching in complementary and alternative medicine was offered often as elective courses in many pharmacy programs (79% in state and 86% in private institutions).<sup>14</sup> Among pharmacy students and faculty, support is strong for incorporating integrative health content into the required curriculum, recognizing the importance of pharmacist competency on the topic given its popularity among consumers.<sup>13,15,16</sup> Several examples of course implementation in pharmacy curriculum and evaluation of students exist, with outcomes showing positive changes in students’ knowledge of, attitudes and perceptions toward, and likelihood of recommending evidence-based complementary medicine or natural products.<sup>17-20</sup> In addition, students wanted more training on complementary medicine and earlier rather than later in the curriculum.<sup>15,17</sup>

Community pharmacies have been identified by consumers as a common place to obtain vitamin supplements and natural products, and consumers expect pharmacists to be knowledgeable about these agents to offer advice.<sup>21,22</sup> However, studies that targeted pharmacists have revealed feelings of inadequate knowledge and skills possessed on

Table 1. Examples of Complementary Health Approaches<sup>5</sup>

| Natural Products   | Mind and Body Practices   | Whole Systems  |
|--|---|--|
| Vitamins and minerals<br>(eg, multivitamin, thiamine, vitamin C, vitamin B6, folic acid) | Yoga<br>Chiropractic and osteopathic manipulation<br>Meditation   | Tai chi<br>Qi gong<br>Healing touch<br>Hypnotherapy  |
| Dietary supplements<br>(eg, fish oil, calcium, coenzyme Q-10, cranberry)                 | Massage therapy<br>Acupuncture<br>Relaxation techniques<br>(eg, breathing exercises, guided imagery, progressive muscle relaxation) | Movement therapies<br>(eg, Feldenkrais method, Alexander technique, Pilates, Roling Structural Integration, Trager psychophysical integration) |
| Herbs (eg, botanicals, spices, essential oils, teas)                                     |   | Traditional healer<br>Ayurvedic medicine<br>Traditional Chinese medicine   |
| Probiotics<br>(eg, <i>Lactobacillus acidophilus</i> , <i>Saccharomyces boulardii</i> )   |   | Homeopathy<br>Naturopathy  |

Table 2. National Center on Integrative Primary Healthcare (NCIPH) Interprofessional Competencies and Pharmacy Competencies

| Interprofessional Competencies <sup>33</sup>   | Pharmacy Competencies   |
|--|---|
| 1. Practice patient-centered and relationship-based care.  | 1. Provide care that is person-centered and relationship-based<br>2. Demonstrate respect and understanding for patients' interpretations of health, disease, and illness that are based upon their cultural beliefs and practices<br>3. Employ motivational interviewing and effective educational strategies that encourage patient engagement in symptom and disease self-management and strategies that improve whole person wellbeing                               |
| 2. Obtain a comprehensive health history which includes mind-body-spirit, nutrition, and the use of conventional, complementary and integrative therapies and disciplines.   | 4. Demonstrate patient-centered history taking that includes physical, nutritional, social, economic, emotional, mental, environmental, and spiritual aspects of health and wellbeing that includes inquiry of conventional and complementary approaches<br>5. Perform integrative health-related patient assessment that includes preventive, pharmaceutical, nutritional, behavioral, social, economic, cultural, environmental and spiritually-relevant determinants |
| 3. Collaborate with individuals and families to develop a personalized plan of care to promote health and well-being which incorporates integrative approaches including lifestyle counseling and the use of mind-body strategies. | 6. Collaborate with patients and care partners in conducting a health screening and management plan for disease prevention and treatment using conventional, complementary and integrative therapies when indicated<br>7. Demonstrate the required knowledge and skills to incorporate integrative health-based self-care and self-management principles into practice settings<br>8. Educate patients and communities in health promotion and disease prevention       |
| 4. Demonstrate skills in utilizing the evidence as it pertains to integrative healthcare.  | 9. Evaluate the strengths and limitations of evidence-based conventional, complementary and integrative healthcare approaches and translation into patient care<br>10. Use evidence-based conventional, complementary and integrative healthcare resources at the point of care for prevention and treatment  |
| 5. Demonstrate knowledge about the major conventional, complementary and integrative health professions.   | 11. Demonstrate a basic knowledge of the standards, training, credentialing, expertise, knowledge and skills of conventional, complementary and integrative health professionals to promote optimal interprofessional collaboration<br>12. Describe common integrative therapies, including their history, proposed mechanisms, dose/potency and duration, safety and efficacy profiles, contraindications, and patterns of use   |
| 6. Facilitate behavior change in individuals, families and communities.  | 13. Facilitate health behavior changes in patients, care partners and communities using an integrative health approach<br>14. Implement person-centered shared decision making that potentially includes integrative healthcare   |
| 7. Work effectively as a member of an interprofessional team.  | 15. Engage diverse health professionals who complement pharmacists' expertise to develop strategies to meet specific patient, care partners and community health needs<br>16. Demonstrate respect for diverse conventional, complementary and integrative professionals who share in the care of patients<br>17. Identify differences among diverse health systems and models used by conventional, complementary and integrative professionals                         |

(Continued)

Table 2. (Continued)

| Interprofessional Competencies <sup>33</sup>   | Pharmacy Competencies  |
|--|--|
| 8. Engage in personal behaviors and self-care practices that promote optimal health and wellbeing.                   | 18. Participate in professional and interprofessional development that improves team performance and quality of care while ensuring that care is delivered safely, effectively, and efficiently  |
| 9. Incorporate integrative healthcare into community settings and into the healthcare system at large.               | 19. Demonstrate personal behaviors and self-care practices that reflect optimal health and wellbeing   |
| 10. Incorporate ethical standards of practice into all interactions with individuals, organizations and communities. | 20. Effectively coordinate care across the healthcare continuum to manage transitions that minimize costs and risks of patients, care partners and communities<br>21. Describe different reimbursement models and their impact on patient access to prevention and treatment<br>22. Use ethical standards of practice in all interactions with patients, care partners, interprofessional team members, health systems and communities |

this topic, with an overwhelming majority supporting increased emphasis within pharmacy curricula.<sup>22,23</sup> With the rise in complementary and integrative health approaches used for multiple diseases such as pain, diabetes, chronic kidney disease, depression and cancer, increased reports of toxicities and harm from use of certain natural products have occurred.<sup>24-32</sup> Therefore, a significant need exists for greater education for pharmacy students and practicing pharmacists on complementary and integrative health approaches including natural medicines. Given the shift in health care practice toward team-based care, an appropriate starting point for pharmacy initiatives is the establishment of educational competencies for integrative health care that aligns with existing interprofessional competencies in integrative health care.<sup>33,34</sup>

## METHODS

The National Center for Integrative Primary Healthcare (NCIPH) was established to develop a core set of interprofessional competencies and curriculum in integrative health care, coordinate the development of sub-competencies for diverse professions, and to advance the incorporation of the competencies in education and training of a wide range of health professionals. Funded by the Health Resources and Services Administration (HRSA), the NCIPH has worked for three years to develop and disseminate these core interprofessional competencies. The NCIPH's Interprofessional Leadership Team reviewed the competencies from family medicine, preventive medicine, nursing, medical student education, integrative medicine fellowship, the Interprofessional Collaborative Practice, and diverse professional standards, including the licensed integrative health disciplines, to develop,

refine and adopt 10 “meta-competencies” previously published.<sup>10-12,33-41</sup> Using the 10 meta-competencies as a foundation, an online Foundations in Interprofessional Integrative Health course (35 hours) was created and pilot-tested across a spectrum of interprofessional primary care practitioners including pharmacists.<sup>33,34</sup>

Following the adoption and publication of the meta-competencies by the NCIPH, individual leadership team members from different professions drafted their profession-specific sub-competencies linked to each interprofessional meta-competency. The pharmacy competencies draft was widely circulated for comments among pharmacy leaders in integrative health, authors and teachers of integrative health topics, and national organization representatives. The pharmacist member of the NCIPH leadership team revised the pharmacy competencies according to the comments received. The competency set was then finalized by the NCIPH Interprofessional Leadership Team. To increase the relevance to pharmacy education, the adapted NCIPH pharmacy competencies were mapped to educational outcomes outlined by the Center for the Advancement of Pharmacy Education (CAPE) and to Bloom's Taxonomy.<sup>42,43</sup>

## RESULTS

A total of 22 sub-competencies for pharmacy, linked to the 10 NCIPH meta-competencies, were developed as shown in Table 2 and disseminated through emails and the NCIPH website. Most meta-competency domains included two to three pharmacy competencies, except domains 7, 8 and 10. The meta-competency 7 on “work effectively as a member of an interprofessional team” was correlated with four sub-competencies for pharmacy

Table 3. National Center on Integrative Primary Healthcare (NCIPH) Pharmacy Competencies Mapped to the CAPE Outcomes and Bloom’s Taxonomy

| <b>Pharmacy Competencies</b>   | <b>CAPE Educational Outcomes Domains<sup>42</sup></b> | <b><sup>a</sup> Bloom’s Taxonomy<sup>43</sup></b> |
|--|---|---|
| 1. Provide care that is person-centered and relationship-based.  | 2.1   | Ap  |
| 2. Demonstrate respect and understanding for patients’ interpretations of health, disease, and illness that are based upon their cultural beliefs and practices.   | 1.1, 2.1, 3.5   | C, Ap   |
| 3. Employ motivational interviewing and effective educational strategies that encourage patient engagement in symptom and disease self-management and strategies that improve whole person well-being.   | 1.1, 2.1, 3.2, 3.6                                    | C, Ap   |
| 4. Demonstrate patient-centered history taking that includes physical, nutritional, social, economic, emotional, mental, environmental, and spiritual aspects of health and well-being that includes inquiry of conventional and complementary approaches. | 2.2, 3.5, 3.6   | Ap  |
| 5. Perform integrative health-related patient assessment that includes preventive, pharmaceutical, nutritional, behavioral, social, economic, cultural, environmental and spiritually relevant determinants.   | 3.5,  | Ap  |
| 6. Collaborate with patients and care partners in conducting a health screening and management plan for disease prevention and treatment using conventional, complementary and integrative therapies when indicated.                                       | 2.1, 2.3  | Ap  |
| 7. Demonstrate the required knowledge and skills to incorporate integrative health-based self-care and self-management principles into practice settings.  | 1.1   | K, C  |
| 8. Educate patients and communities in health promotion and disease prevention   | 3.2, 2.3, 2.4   | Ap  |
| 9. Evaluate the strengths and limitations of evidence-based conventional, complementary and integrative health care approaches and translation into patient care.  | 2.1, 3.1  | An, E   |
| 10. Use evidence-based conventional, complementary and integrative health care resources at the point of care for prevention and treatment.  | 2.1, 2.3  | Ap, S   |
| 11. Demonstrate a basic knowledge of the standards, training, credentialing, expertise, knowledge and skills of conventional, complementary and integrative health professionals to promote optimal interprofessional collaboration.                       | 1.1, 3.4  | K   |
| 12. Describe common integrative therapies, including their history, proposed mechanisms, dose/potency and duration, safety and efficacy profiles, contraindications, and patterns of use.  | 1.1, 2.2  | K, C  |
| 13. Facilitate health behavior changes in patients, care partners and communities using an integrative health approach.  | 2.1, 2.3, 2.4   | Ap  |
| 14. Implement person-centered shared decision making that potentially includes integrative health care.  | 2.1   | Ap, S, E  |
| 15. Engage diverse health professionals who complement pharmacists’ expertise to develop strategies to meet specific patient, care partners and community health needs.  | 3.4, 4.2  | An, S   |
| 16. Demonstrate respect for diverse conventional, complementary and integrative professionals who share in the care of patients.   | 4.1, 4.4  | Ap  |
| 17. Identify differences among diverse health systems and models used by conventional, complementary and integrative professionals.  | 1.1, 3.4  | An  |
| 18. Participate in professional and interprofessional development that improves team performance and quality of care while ensuring that care is delivered safely, effectively, and efficiently.   | 3.4, 4.2  | S, E  |
| 19. Demonstrate personal behaviors and self-care practices that reflect optimal health and well-being.   | 2.3, 4.1  | Ap  |

(Continued)

Table 3. (Continued)

| Pharmacy Competencies  | CAPE Educational Outcomes Domains <sup>42</sup> | <sup>a</sup> Bloom's Taxonomy <sup>43</sup> |
|--|---|---|
| 20. Effectively coordinate care across the health care continuum to manage transitions that minimize costs and risks of patients, care partners and communities. | 2.2, 4.3  | Ap, E                                       |
| 21. Describe different reimbursement models and their impact on patient access to prevention and treatment.  | 2.2   | C, An                                       |
| 22. Use ethical standards of practice in all interactions with patients, care partners, interprofessional team members, health systems and communities.          | 4.2, 4.4  | Ap  |

CAPE=Center for the Advancement of Pharmacy Education

<sup>a</sup>Bloom's Taxonomy: K=Knowledge, C=Comprehension, Ap=Application, An=Analysis, S=Synthesis, E=Evaluation

on engaging diverse health professionals, demonstrating respect, identifying differences among health systems and models used, and participating in professional and inter-professional development to improve team performance. The meta-competencies 8 and 10 on “engage in personal behaviors and self-care practices that promote optimal health and well-being” and “incorporate ethical standards of practice into all interactions with individuals, organizations and communities,” respectively, were coupled with a single pharmacy competency each.

Table 3 illustrates the alignment of the NCIPH pharmacy competencies with associated 2013 CAPE outcomes domains and Bloom's Taxonomy categories.<sup>42,43</sup> As expected, the integrative health pharmacy competencies, with an emphasis in interprofessional care, were well correlated with the CAPE outcomes, having components from all four domains represented.<sup>42</sup> The NCIPH pharmacy competencies also mapped readily to Bloom's Taxonomy with “application” category most often represented, though all six categories were noted.<sup>43</sup>

## DISCUSSION

The pharmacy competencies in integrative health care, associated with the NCIPH interprofessional meta-competencies, are well aligned with the CAPE outcomes and Bloom's Taxonomy, making them ideal for curricular implementation in schools and colleges of pharmacy. The findings from available educational research indicate the need for greater emphasis on complementary and integrative health within pharmacy curricula to equip pharmacists with knowledge and skills needed to provide evidence-based guidance to meet public demand.<sup>21-23</sup> At the same time, a strong interest among pharmacy students and faculty has been recognized.<sup>13-16</sup> The NCIPH pharmacy competencies, established through an extensive vetting process among pharmacists and academic experts, may serve as a starting point for educational and training initiatives in complementary medicine and integrative health care.

The inclusion of complementary and integrative health in pharmacy curricula is supported by the ACPE standards and guidelines, particularly in standards 2, 3 and 11.<sup>44</sup> Standard 2 is on Essentials for Practice and Care with key elements of patient-centered care and health and wellness that point to the importance of establishing competencies in complementary and integrative health. Standard 3 on Approach to Practice and Care includes key elements of education, patient advocacy, interprofessional collaboration and cultural sensitivity, for which complementary and integrative health knowledge may be crucial. Standard 11 on Interprofessional Education with key elements of interprofessional team education and interprofessional team practice also injects the need for competent knowledge and skills in complementary and integrative health for pharmacists serving as members of interprofessional teams.<sup>44</sup> Thus, it would be logical to incorporate integrative health care content within didactic teaching focused on the evidence base. Likewise, evidenced-based knowledge on complementary and integrative health would be valuable for student pharmacists to further acquire and apply during their introductory and advanced pharmacy practice experiences. Additionally, acquiring knowledge about complementary and integrative health approaches may be empowering to students, both for patient care and self-care. Since burnout is a concern among pharmacy students working through rigorous curriculum and extra-curricular responsibilities, seeking ways for self-care to obtain and maintain resilience is important.<sup>45,46</sup> For self-care, student pharmacists may be able to use complementary approaches to reduce stress and integrative health if suffering from health conditions.

The online Foundations in Interprofessional Integrative Health course based on the NCIPH meta-competencies has been pilot-tested among numerous interprofessional practitioners and students, including pharmacy programs. Based on the feedback from the pilot study, the course

was revised and is available at <https://nciph.org/curriculum.html>. In the Foundations course, the pharmacy competencies were used to guide the development of an interactive case study in patient assessment, where a pharmacist conducts an interview of a patient with chronic diseases using polypharmacy including natural products. In addition, pharmacist input was provided for all of the cases used in the course as part of interprofessional collaboration. Next steps are to widely disseminate and promote adoption of the NCIPH meta-competencies among primary care professions and disciplines. At the same time, utilization of pharmacy competencies in creation and implementation of complementary and integrative health educational efforts across pharmacy programs will be advocated.

## CONCLUSION

Consumer and patient interest in complementary and integrative approaches to health and health care has continued to grow. The existing level of education of pharmacy students and practicing pharmacists regarding these approaches may not be sufficient to contribute to high quality patient-centered care, especially compared with other health professions. The adoption of pharmacy-based competencies in integrative health care that are well aligned with the CAPE outcomes and consistent with interprofessional competencies is a first important step.

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