

Background

- Diet, nutrition, and lifestyle modification are universally recommended to treat or prevent various chronic health conditions
- Pharmacists are experts in pharmacotherapy, accessible to the community, and ideally positioned to counsel and educate patients on nutrition
- Multiple studies show that pharmacist-driven interventions have improved patient outcomes in diabetes and cardiovascular diseases^{1,2,3}
- The Accreditation Council for Pharmacy Education (ACPE) and the American Association of Colleges of Pharmacy (AACP) have recommended increasing the teaching of health promotion and disease prevention in pharmacy⁴
- Pharmacists' role in disease management is evidenced by the APhA Certificate Training Programs (CTP) in immunization, diabetes care, medication therapy management, and cardiovascular disease risk management⁵
- It has been suggested that pharmacists are not adequately educated and trained to meet this demand, leaving opportunity for curricular enhancement^{6,7}
- Current nutrition course offerings in pharmacy have not been benchmarked in the U.S.

Objective

- To benchmark the nutrition education offered by pharmacy schools in the United States
- To assess faculty and administrator attitudes regarding pharmacist training in nutrition for the prevention and management of disease

Methods

- This study was approved by the Rutgers Institutional Review Board
- The Qualtrics Survey Software was used to create an anonymous and voluntary survey that was emailed to the Dean of Assessment (or equivalent) of 131 candidate and accredited pharmacy schools in the U.S.
- Email links to the survey were unique to each participant, and email addresses were extracted from the faculty pages of each school's website
- Two email reminders were sent, and the time window to reply to the survey was from Jan 5, 2016 to Feb 5, 2016
- Survey questions assessed:
 - APhA certificate training programs that each of the schools offer, if any
 - Number of nutrition education courses offered, if any
 - Course name and course number
 - Credit hours the course awards
 - Which professional year that the course is offered
 - Whether the course is required or is an elective
 - Which descriptions of nutrition education the course fulfills, as outlined by the survey
 - Who coordinates the course
 - Their perspective on the sufficiency of nutrition training for pharmacist to be able to assist in preventing, treating, and managing chronic diseases
- A nutrition course must have at least one of the following primary objectives:
 - **Counseling** - Teaching students how to counsel patients on nutrition, food preparation, and meal planning.
 - **Dieting** - Dietary recommendations (ADA, AHA) and specific diets.
 - **Nutrients** - Macronutrients and micronutrients and their functions and daily requirements.
 - **Diseases** - Mechanisms and markers that underlie the relationship between food, diseases, and their treatments.
 - **Therapies** - Overview of nutraceuticals and their safety and efficacy.
 - **Interactions** - Food-drug interactions and nutrient imbalances.

Results

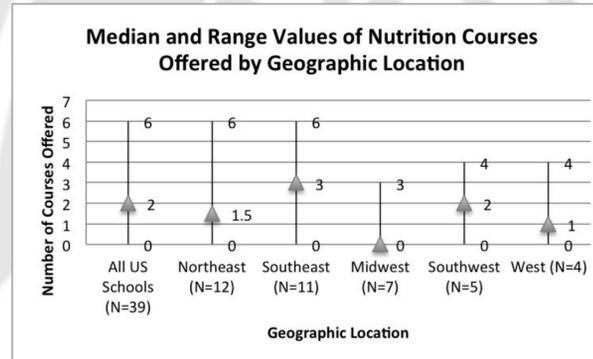


Figure 1. While the overall median (represented by a triangle) number of nutrition courses was 2, the difference in the most and the least number of nutrition courses offered by a school was six. A median that is not an integer was from taking the average of two median numbers. A sample of 39 schools answered the question on the number of nutrition courses offered, while 3 schools did not answer this question.

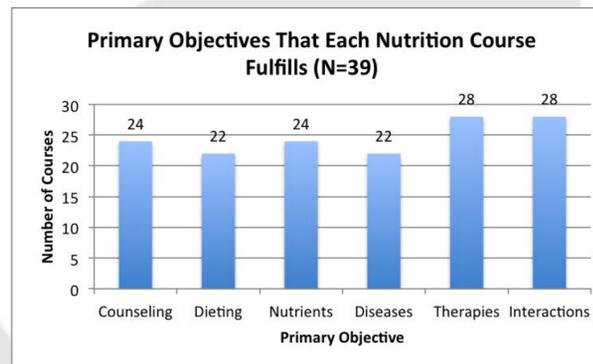


Figure 3. Subjects were asked to classify which of the following primary objectives their nutrition courses fulfill (see definitions in Methods section). A sample of 39 schools answered the question on the primary objective(s) that each nutrition course fulfilled, while 3 schools did not answer this question.

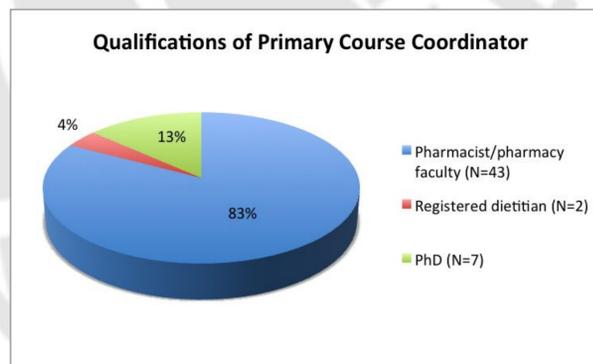


Figure 5. Pharmacist/pharmacy faculty made up the majority for coordinators in nutrition courses. In this question, each of the 39 schools that responded could list more than one nutrition course with a corresponding course coordinator (hence, a total of 52 responses).

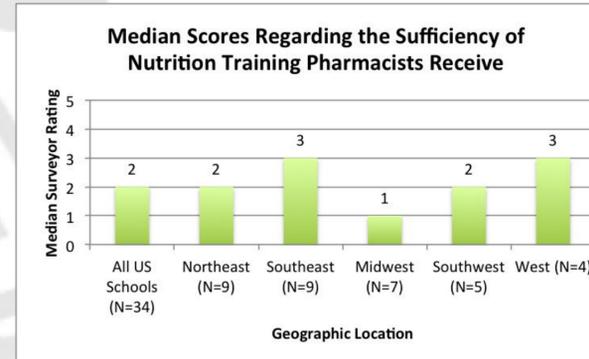


Figure 2. Subjects rated the amount of nutrition education pharmacists have on a scale of 1-5, with 1 being "not enough training", 3 being "enough training", and 5 being "too much training". A sample of 34 schools answered the question on the sufficiency of nutrition training, while 8 schools did not answer this question.

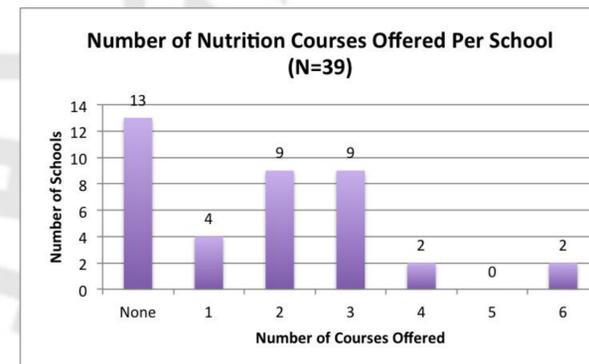


Figure 4. Subjects were asked how many nutrition courses their affiliated school offered that fulfilled any of the six primary objectives. A sample of 39 schools answered the question on the number of nutrition courses offered, while 3 schools did not answer this question.

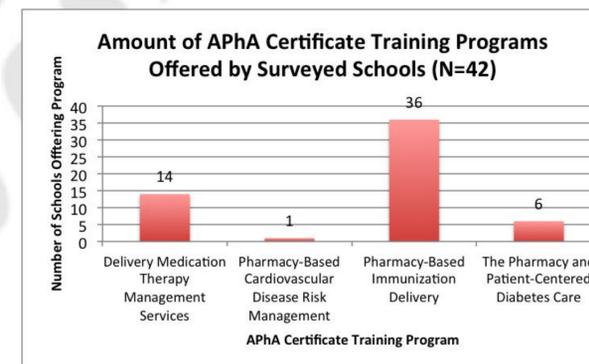


Figure 6. Subjects were asked which APhA Certificate Training Programs their schools offered to students. All 42 schools responded to this question on APhA CTPs offered in their curriculum. Six schools offered no APhA CTPs, while some schools offered more than one APhA CTP.

Discussion

- 32% response rate, n=42
- A 2007 study found that few pharmacy schools offered coursework on lifestyle strategies to promote public health and disease prevention: 4/50 (8%) and 7/50 (14%) schools had at least one required course and elective course, respectively⁷
- According to our definitions, our study showed an increase in nutrition course offerings, where 26/39 (66%) of schools offer at least one and an overall median of 2 course with nutrition as a primary objective, but the overall perception is that nutrition training for pharmacists is relatively inadequate (median score=2)
- The number of courses offered did not correlate with the score given by school administrators, and geographic stratification revealed regional differences, ex:
 - Southeast - offered 3 courses, and gave a score of 3
 - West - offered one course, and gave a score of 3
- Nutrition courses covered all primary objectives outlined in the study
- Nutrition courses offered have mostly been taught by pharmacists; open question whether it is because of training in nutrition or in spite of the lack thereof
- APhA CTP offered for students are mainly in Immunization and MTM
- Barriers to incorporating nutrition education into the curriculum
 - Culture/tradition of patient care and pharmacy practice
 - Patient care focused on treating disease versus preventing disease
 - Pharmacists are not responsible for educating patients on nutrition
 - Results suggest a shift in culture, where pharmacy schools recognize that there is inadequate nutrition education in the curriculum
 - Lack of resources or qualified individuals to teach topics in nutrition
 - In the results, mostly pharmacists are teaching the nutrition courses, but there are no standardized measures/ABOs for nutrition education
 - Resources available to teach nutrition may vary from region-to-region
 - Time and costs
 - No room in the curriculum to incorporate nutrition coursework
 - No time in pharmacy practice to educate and counsel patients
 - Lack of reimbursement incentive to counsel patients

Limitations

- Response rate was less than goal of 50% (65/131) and not equal across regions
- Incomplete responses and subject variability in self-reporting

Conclusions

- While our study showed an increase in nutrition course offerings, the overall perception is that nutrition training for pharmacists is relatively inadequate
- Various factors and barriers affect the incorporation of nutrition education
- Nutrition education can expand the role of pharmacists, and further research on the amount and impact of nutrition education in pharmacy is warranted

References

1. Pousinho S, Morgado M, Falcão A, et al. Pharmacist Interventions in the Management of Type 2 Diabetes Mellitus: A Systematic Review of Randomized Controlled Trials. *J Manag Care Spec Pharm.* 2016 May;22(5):493-515.
2. Santschi V, Chioloro A, Colosimo AL, et al. Improving blood pressure control through pharmacist interventions: a meta-analysis of randomized controlled trials. *J Am Heart Assoc.* 2014 Apr 10;3(2):e000718.
3. Santschi V, Chioloro A, Paradis G, et al. Pharmacist Interventions to Improve Cardiovascular Disease Risk Factors in Diabetes: a systematic review and meta-analysis of randomized controlled trials. *Diabetes Care.* 2012 Dec; 35(12): 2706-2717.
4. Accreditation Council for Pharmacy Education. Accreditation Standards and Key Elements for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree. Chicago, IL: Accreditation Council for Pharmacy Education; 2015.
5. APhA Training Programs. Pharmacist.com. American Pharmacists Association. 2016.
6. DiMaria-Ghalili RA, Mirtallo JM, Tobin BW, et al. Challenges and opportunities for nutrition education and training in the health care professions: intraprofessional and interprofessional call to action. *Am J Clin Nutr.* 2014 May;99(5 Suppl):1184S-93S.
7. Lenz TL, Monaghan MS, Hetterman EA. Therapeutic lifestyle strategies taught in US Pharmacy Schools. *Prev Chronic Dis.* 2007;4(4):A96

