INNOVATIONS IN TEACHING

A Nutrition Journal and Diabetes Shopping Experience to Improve Pharmacy Students' Empathy and Cultural Competence

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Objectives. To implement and assess the effectiveness of an exercise designed to develop pharmacy students' empathy toward patients regarding diabetes and obesity and encourage cultural and "economic" competence.

Design. Students in the Nutrition Journal and Diabetes Shopping Experience attended a nutrition and weight management lecture, monitored their own nutritional intake by maintaining an online nutrition and exercise journal, and grocery shopped based on an assigned patient scenario. Scenarios varied in terms of income, ethnicity, insurance coverage, family size, grocery store, and medication lists. Students completed written reflections and group discussions and completed pre- and post-assignment survey instruments.

Assessment. The activities improved student confidence levels regarding nutrition and weight-related patient counseling, and knowledge about general nutrition and weight management. The majority of students agreed that the activities improved their ability to empathize with overweight patients regarding the challenges of nutrition and lifestyle changes and enhanced their awareness of the impact that cultural and financial situations have on nutrition and lifestyle.

Conclusion. The Nutrition Journal and Diabetes Shopping Experience positively impacted the way pharmacy students view the challenges surrounding nutrition and healthy eating in patients with culturally and socioeconomically diverse backgrounds.

Keywords: cultural competence, empathy, diabetes, nutrition, health improvement, disease prevention

INTRODUCTION

In 2005, the Northeastern University School of Pharmacy developed and adopted a set of programmatic ability-based outcomes in response to the changing landscape of pharmacy, the 2004 Center for the Advancement of Pharmaceutical Education outcomes, and the Accreditation Council for Pharmacy Education guidelines.^{1,2} Subsequently, the School's curriculum and assessment committees mapped the curriculum to identify how and where the ability-based outcomes were being addressed in the curriculum. Four curricular components were identified as needing closer examination. Several curriculum

workgroups were charged with examining specific areas of the curriculum and providing recommendations for how the ability-based outcomes could be better addressed immediately within the existing curricular structure through course activities. The workgroup reviewing course content on diabetes recommended adding the Nutritional Journal and Diabetes Shopping Experience. These activities addressed 2 of the curricular components identified as needing closer examination: demonstrating compassion and cultural competency; and promoting health improvement, wellness, and disease prevention.

Activities designed to develop empathy and compassion in health professions students have been reported in the literature. As part of a diabetes certification program, pharmacy students were required to complete a personal diet analysis as well as role-play for 1 week as a person with diabetes.³ Two other schools implemented an activity that used the Patient Empathy Modeling method and required students to simulate the life of a patient who was living with multiple chronic diseases and experiencing economic, cultural, and/or communication challenges to obtaining care.⁴ In another study, medical students were

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voluntarily admitted to a hospital overnight in order to understand what a hospitalized patient experiences.⁵

In addition to activities to encourage compassion and empathy, many schools and colleges of pharmacy have either incorporated or are in the process of incorporating cultural competency into the curriculum. In a survey designed to assess cultural competency in the curricula of US and Canadian schools and colleges of pharmacy, 51% of respondents reported that changes had been made to the curriculum in the past 5 years to reflect diversity perspectives.⁶ Examples of these changes included adding didactic and case-based activities related to cultural competence into courses, preparing students for diversity in experiential activities, and placing greater emphasis on cultural competency in communications courses.⁶ Other activities that have been incorporated into pharmacy curricula include simulation games and book clubs.⁷

Coursework focusing on health promotion, wellness, and disease prevention also has made its way into pharmacy curricula. In response to a 2007 survey, 16 colleges and schools of pharmacy reported offering course content on nutrition, smoking cessation, weight loss, alcohol use, or a combination of these topics in required courses or elective courses.⁸ Chang and colleagues developed a 2-credit hour elective course on clinical nutrition with an emphasis on problem-based learning exercises and case-based scenarios that significantly improved students' self-efficacy and confidence in providing nutrition-related patient counseling.⁹ Similarly, a 2-credit hour elective course in pharmacotherapy on lifestyle modification resulted in improvements in students' skills and confidence regarding wellness and disease prevention, but did not affect student beliefs regarding health behaviors.¹⁰

The Nutrition Journal and Diabetes Shopping Experience was designed to expose students to the challenges

associated with healthy eating, nutritional meal planning, and managing diabetes, while balancing family, financial, and cultural responsibilities. The goal was to give students a better appreciation and understanding of how these factors affect nutrition choices and diabetes prevention or management and be able to use the lessons learned when interacting with patients. The faculty members viewed this activity as a way to address ability-based outcomes, and better bridge didactic coursework with real-world clinical practice in the culturally and economically diverse community of Boston where there is an increasing prevalence of obesity and diabetes. Because weight loss and nutrition advice and diabetes care are areas in which pharmacists can have an impact, the topic of diabetes was an obvious area to focus intervention activities.¹¹ We hypothesized that implementing 2 activities requiring students to "live in the shoes" of patients would improve student attitudes and confidence levels regarding nutrition and lifestyle changes in patients with culturally and socioeconomically diverse backgrounds.

DESIGN

In 2007, the Northeastern University School of Pharmacy introduced the Nutrition Journal and Diabetes Shopping Experience to help students gain an appreciation for the challenges faced by patients who are overweight, obese, or have diabetes. The learning objectives are listed in Table 1.

The majority of diabetes-related content in the pharmacy curriculum is covered in the Therapeutics I course given in the second year. The 3-semester hour course, which was taught in two 75-minute lectures per week, was taken in conjunction with a seminar, which was held for 3 hours every week. Each seminar section had no more than 14 students and was facilitated by a faculty member

Table 1. Learning Objectives of Nutrition Journal and Diabetes Shopping Experience

Upon completion of this activity, the student will be able to:
1. Calculate basal metabolic rate (BMR).
2. Assess caloric and nutritional intake.
3. Determine daily calorie needs based on BMR and activity level.
4. Develop a MyPyramid nutrition plan (ie, desired amounts from each food group) for a 2000 calorie per day diet. ¹²
5. Given a patient scenario, compare and contrast actual calorie and nutrition intake patterns to suggested calorie and nutrition intake.
6. Given a patient scenario, provide suggestions on how to appropriately modify caloric and nutritional intake, to better align with calorie needs and the MyPyramid nutrition plan.
7. Given a patient scenario, develop a culturally appropriate shopping list for a person with diabetes.
8. Given a patient scenario, develop a shopping list that includes nutritionally appropriate foods for a person or family member that has diabetes and is overweight or obese.
9. Given a patient scenario, develop an income appropriate shopping list for a person/family with diabetes.
10. Given a patient scenario, construct a food budget for a single person or family, considering family size, medications, and other expenses.

or an adjunct preceptor. Although most seminars included more traditional case-based activities, other innovative activities that met course objectives were encouraged. Three seminar sessions focused on diabetes, providing ample time for both traditional therapeutic case-based activities as well as other new activities. With that in mind, the Nutrition Journal and the Diabetes Shopping Experience were incorporated into 2 of the diabetes seminar sessions.

Prior to starting the activities, students attended a 75-minute didactic lecture on nutrition and weight management. Students reviewed basic nutrition-related content such as different types of energy sources supplied by a regular diet, portion sizes, and the My Pyramid guidelines.¹² Students were then assigned the Nutrition Journal activity, which was developed to solidify and apply the foundational elements of nutrition and healthy eating covered in the didactic lecture and to help students gain hands-on experience with nutrition-related activities such as counting calories, estimating portion sizes, and evaluating individual meals for carbohydrate, fat, and protein content. For this activity, students calculated their basal metabolic rate (BMR) and assessed their own nutritional intake by maintaining an online nutrition and exercise journal. Students were directed to calculate BMR and then use the FitDay Web site (Internet Brands, Inc; El Segundo, CA) to manage their nutrition and exercise journal. Students were instructed to enter their food intake and physical activity for 5 days online at www.fitday.com. Upon completion, students downloaded their daily calorie report, nutrition report, and custom nutrition goals report for review. Students then prepared a written reflection on the assignment by answering questions listed on a worksheet. During the next seminar session, students discussed their reflections with other students and the seminar facilitator. In addition, students were asked to comment on the level of difficulty of the exercise, necessary time commitment, and whether they made any behavior changes over the 5 days.

The second portion of the activity, the Diabetes Shopping Experience, was designed to build upon the Nutrition Journal assignment and involved students taking a shopping trip to a grocery store. Students were divided into groups of 2 to 4 people. Each group was assigned 1 of 5 patient scenarios (Appendix 1) and then had to grocery shop as if they were the person in the scenario. The scenario provided important information, such as income, insurance coverage, family size, concurrent disease states, medication lists, and the name and address of the grocery store where the person in the scenario shops. The patient scenarios included people from diverse ethnic backgrounds, ages, socioeconomic levels, and family situations. The grocery stores included small eth-

nic stores, specialty food stores, and large chain supermarkets, and were selected because they were the stores most frequented by patients similar to those described in the scenarios. At least 1 person in the patient scenario had type 2 diabetes.

Upon receiving the scenario assignments, the group members developed a budget based on the financial information given and determined how much money they could spend on a 1-week supply of groceries for themselves and family members. For simplicity, students were instructed to construct the budget by subtracting the expenses listed from the patient's monthly income. Students had to determine the co-pays of the medications for all members in the household, and subtract the total from the monthly income. Students used the amount left over to determine how much money could be used to buy a week's worth of groceries for the household. Students were advised to research foods and meals specific to their patient's culture. Students then prepared a grocery list that included culturally appropriate, diabetes-friendly, healthy foods. After making the lists, students went to the grocery store to "shop." Students were required to go to the grocery store listed in their patient scenario, which was confirmed by students submitting store circulars or receipts with their assignments. While at the store, students wrote down the price of the foods that they wished to "purchase." After the shopping trip, students calculated the total cost of the groceries selected and compared this to how much they actually budgeted to spend. Students then prepared a written reflection in response to the questions listed on the worksheet. During the next seminar class, students discussed their reflections with other students and the seminar facilitator.

Student learning was assessed in a variety of ways. Students were required to complete written reports and documentation of successful completion of the assignments as well as participate in verbal discussions during the seminar. To determine if students successfully achieved the objectives of the assignments (Table 1), the 2 course instructors evaluated all nutrition journal downloads, budgets, shopping lists, and student self-reflections. Students were deemed to have met the nutrition journal standards if their journal downloads and reflections documented the following: an accurately calculated BMR, nutritional intake for 5 days, a comparison of their average nutritional intake over the 5-day period to the My Pyramid guidelines, and 1 suggestion on how to modify a meal to better align with the My Pyramid guidelines. Students were deemed to have met the Diabetes Shopping Experience standards if their budgets, shopping lists, and reflections documented the following: an accurately calculated budget, a final grocery list within the calculated

budget containing enough food for 1 week, nutritionally appropriate food items, and at least 5 culturally-specific food items.

Students also completed an online survey 1 week before the nutrition activities started and approximately 5 months after completing the assignments. The survey instrument was designed to assess the students' baseline knowledge of basic nutritional concepts as well as confidence and attitudes towards nutrition and weight-related issues, and to provide insight to the student's perceptions of the pharmacist's role in nutrition management. Students were asked to rank how confident they were in completing patient care and education activities on a 4-point scale of very confident, confident, unconfident, or very unconfident. Students were asked to indicate their level of agreement with several attitudinal statements using a 4-point scale of strongly agree, agree, disagree, or strongly disagree. A Fisher exact test was used to compare student responses before and after completing the activities, with significance set at $p \leq 0.05$.

Students also completed an evaluation of the activities, which included questions regarding the perceived impact the activities had on the students' ability to work with patients who required nutrition management and whether or not the activities should be continued the following year. Seminar facilitators completed peer evaluations of the activities. Lastly, knowledge-based questions were embedded within the midterm and final examinations of the course.

Care was taken to ensure that the activities addressed various levels of learning noted in Bloom's Taxonomy of Learning.¹³ The activities addressed the levels of knowledge and comprehension through the didactic coursework and examinations, and the levels of application, analysis, synthesis through the activities themselves and small group discussions.

ASSESSMENT

Learner Evaluation

All students enrolled in the Therapeutics 1 course ($n = 122$) successfully achieved the specified stan-

dards for the 2 activities. All students completed the pre-assignment survey instrument. Forty-three students completed the post-assignment survey instrument. Before the activity, students were asked about their familiarity with the national food pyramid. Approximately 14% of the students reported being very familiar with the food pyramid, 82% reported being somewhat familiar, and 4% reported only hearing of it. Familiarity scores improved after the activities, with 29% of the students reporting being very familiar with the food pyramid, 68% being somewhat familiar, and none reporting they had only heard of it. Prior to participating in the activity, 29% of students were able to correctly identify a food product representing a serving size of a carbohydrate, where as 49% correctly did so after the assignment. The percent of students answering correctly after completing the assignment was still very low.

Student confidence ratings for all 4 counseling activities related to nutrition, physical activity, or weight loss improved, with the most dramatic improvement seen in student confidence levels for counseling patients with diabetes about appropriate nutrition and physical activity (Table 2). Before the activities, only 34% of students felt confident to conduct such counseling. This number increased to 90% after the activities. All of these improvements were significant.

Student attitude results are shown in Table 3. The percent of students agreeing that it is challenging for a patient with diabetes to adhere to a healthy diet significantly increased after completing the activities. The activities did not significantly affect student attitudes towards the role of a pharmacist in supporting or advising patients about nutrition and weight management. Over 90% of students already agreed that pharmacists should teach patients strategies for a healthy lifestyle and provide basic nutrition counseling prior to the activity. Agreement with these attitudes remained very high throughout the activity. Interestingly, student responses suggested a belief both before and after the activity that community pharmacists were in a better position than hospital pharmacists to advise patients about weight-loss strategies.

Table 2. Student Confidence in Nutrition and Diet Counseling Tasks, Before and After Participating in a Nutrition Journal and Diabetes Shopping Experience

Nutrition and Diet Counseling Task	Very Confident or Confident (%)		P
	Before (n = 122)	After (n = 43)	
Counsel a healthy patient about appropriate nutrition and physical activity	72.9	92.5	0.009
Counsel a patient with diabetes about appropriate nutrition and physical activity	33.6	90.0	<0.001
Advise an obese patient on how to safely lose weight	64.7	85.0	0.017
Identify the amount of calcium contained in a particular food if given the nutrition label	63.1	84.7	0.017

Table 3. Student Attitudes About Diabetes and Obesity Before and After Participating in a Nutrition Journal and Diabetes Shopping Experience

	Strongly Agreed or Agreed (%)		<i>P</i>
	Before (n = 122)	After (n = 43)	
One role of a pharmacist is to teach patients strategies for a healthy lifestyle.	95.9	95.0	1.000
It is easy to follow a healthy diet, some people are just lazy.	30.3	17.5	0.152
It is challenging for a patient with diabetes to adhere to a healthy diet.	77.1	92.5	0.037
A community pharmacist is in a good position to help advise obese patients about weight loss strategies.	76.2	72.5	0.675
A hospital pharmacist is in a good position to help advise obese patients about weight loss strategies.	53.3	42.5	0.276
A pharmacist should provide basic nutrition counseling when working with a patient who is overweight or obese.	82.0	80.0	0.816
A pharmacist should provide basic nutrition counseling when working with a patient with type 2 diabetes.	95.1	92.3	0.453
In order to avoid offending the patient, a pharmacist should not offer advice about diet or exercise unless the patient asks.	30.4	25.0	0.5548

On the final examination, student knowledge was assessed through a multiple-choice question. Students were asked to select which of 4 statements would be most appropriate to make to an overweight patient with type 2 diabetes. The options included statements pertaining to the recommended amounts and types of dietary carbohydrates and fats. Seventy-five percent of students answered correctly. When asked this question again in the post-assignment survey 5 months later, 54% of students answered correctly.

Students completed written self-reflections for both assignments which included responses to directed questions. For the Nutrition Journal self-reflection, students were asked the following series of questions.

Which goal was most important to you and why? Were you able to meet this goal? What kept you motivated? What got in the way? Most students selected the amount of daily caloric intake as their primary goal. Other common themes in the student responses related to exercise or intake of a selected vitamin or mineral. Several students cited their hectic schedules and lack of healthy meal options on campus as a barrier to meeting their goals.

Discuss your average nutritional intake over the 5 day period and how well it fit within the My Pyramid guidelines. Most students commented on their ability to meet the carbohydrate, fat, and protein requirements as well as the recommended daily allowances of major vitamins and minerals. Many students noted low intakes of calcium, vitamin D, vitamin K, and magnesium. A large portion of students also recognized the need to increase their fiber intake and improve the types of carbohydrates they were consuming (eg, whole grains vs. refined grains).

Discuss one meal you ate during the 5 day period. Without changing the basic composition of the meal, discuss changes that you could have made to align it more closely with the My Pyramid guidelines. Students selected a wide variety of meals and modifications and successfully demonstrated their abilities to make such suggestions to patients. Common examples of simple modifications noted by the students included adding vegetables to a pasta dish or replacing white bread with whole grain wheat bread.

How might this activity impact the way in which you interact with an overweight patient in helping to prevent disease? Student responses were overwhelmingly positive, indicating an increased awareness of the challenges facing overweight patients. A student wrote: "This activity will help me in interacting with an overweight patient because I now have a greater appreciation for the painstaking efforts pre-diabetics and diabetics must make each and every day in order to maintain adequate nutrition without overdoing it."

For the Diabetes Shopping self-reflection, students were asked the following series of questions:

What was the most challenging part of this activity? Most of the students found that determining which foods are appropriate for a person with diabetes was the most challenging. Students also found it difficult to substitute healthier ingredients for less healthy ingredients typically used in traditional ethnic meals. One student wrote: "The most challenging part was to think like a person with diabetes and look at the nutritional facts before considering buying it."

How easy or difficult was it to purchase healthy, diabetes friendly foods on your income? Responses varied

based on the incomes assigned to the students; however, most students found it easy to stay within the budget by making adjustments such as substituting fresh produce with frozen options or brand name products with store brand products.

Did you make any adjustments to your grocery list once you started shopping? What adjustments did you make? Why? A number of students made substitutions in an attempt to make healthier recipes, such as substituting brown rice for white rice. Some students also substituted or removed items from their list once they determined the cost of the item. A student wrote: "Instead of buying all fresh vegetables, I chose to buy some frozen packages because they were less expensive and last longer."

What was most and least surprising about your shopping experience? Responses to this question were store specific. Students who shopped at ethnic stores were surprised at the low prices of the food and the lack of variety of fresh produce in some stores. Many students mentioned how different the store was compared to the stores where they normally shopped. Another general theme was related to the nutritional content of many foods. One student noted: "The most surprising thing was the lack of nutritional items at the store. Although the products are organic, most of them still contain a large amount of sodium and sugar."

How might this activity impact the way in which you interact with a patient with diabetes? The major theme was that students felt that the activity made them more empathetic to patients with diabetes. In addition, students mentioned that they now feel more prepared to make recommendations to patients with diabetes about nutritional choices. A student commented: "This activity

made me realize how important it is to understand someone's culture and income level before recommending lifestyle changes. Now I realize some foods that I enjoy are just not part of some people's diet and are really expensive and not reasonable for someone on a very low budget. I now know that it takes time to gather the information to make an appropriate recommendation to a patient."

Curriculum Evaluation

Forty-three students completed an evaluation of the assignments, and overall responses were positive (Table 4). The majority of students agreed or strongly agreed that the activities improved their ability to empathize with overweight patients, promote health, wellness, and disease prevention, and improved their awareness of the impact that financial and family situations can have on nutrition, lifestyle, and diabetes management. Students reported that the activities were practical and helped them learn in a manner that could not be obtained in the classroom.

Students also provided some ideas of ways to improve the assignments. Students suggested modifying the assignment so that all scenarios involved challenging budgets and stores that cater to more diverse populations, as the scenario that involved a large budget and a high-end grocery store was less helpful. Students suggested that the nutrition journal assignment should allow students to choose from different sites rather than requiring the use of a single site. This would allow students to compare and contrast the utility and ease of different sites.

Seven out of the 10 seminar facilitators completed a peer evaluation of the assignments (Table 5). Feedback from facilitators indicated that the activities were successful and resulted in interesting and useful dialogue during

Table 4. Student Evaluations of a Nutrition Journal and Diabetes Shopping Experience (N = 48)

	Strongly Agreed or Agreed (%)
<i>Completing the Nutrition Journal and Shopping Experience:</i>	
Improved my ability to empathize with overweight or obese patients regarding the challenges of nutrition and lifestyle changes	72.5
Improved my ability to promote health improvement, wellness, and disease prevention	75.0
Positively impacted the way in which I will interact with an overweight patient in helping prevent disease	72.5
Improved my awareness of the impact that cultural differences have on nutrition and lifestyle	87.2
Impacted the way in which I interact with patients with diabetes	61.5
Improved my awareness of the impact that financial and family situations have on nutrition and lifestyle	87.5
Improved my awareness of the impact that financial and family situations have on diabetes management	86.8
<i>Indicate your level of agreement with the following statements:</i>	
I recognize and appreciate the challenges surrounding nutrition and lifestyle changes that face patients who are overweight or obese	97.5
The Nutrition Journal Assignment should be continued next year	92.5
The Diabetes Shopping Experience should be continued next year	75.0

Table 5. Facilitator Evaluations of a Nutrition Journal and Diabetes Shopping Experience (N = 7)

	Strongly Agreed or Agreed (%)
<i>Completing the Nutrition Journal and Shopping Experience:</i>	
Improved students' ability to empathize with overweight or obese patients regarding the challenges of nutrition and lifestyle changes	71.5
Improved students' ability to promote health improvement, wellness, and disease prevention	85.7
Positively impacted the way in which students will interact with an overweight patient in helping prevent disease	85.7
Improved students' awareness of the impact that cultural differences have on nutrition and lifestyle	100.0
Impacted the way in which students will interact with patients with diabetes	71.5
Improved students' awareness of the impact that financial and family situations have on nutrition and lifestyle	85.7
Improved students' awareness of the impact that financial and family situations have on diabetes management	100.0
<i>Indicate your level of agreement with the following statements:</i>	
My seminar students can recognize and appreciate the challenges surrounding nutrition and lifestyle changes that face patients who are overweight or obese	85.7
The Nutrition Journal Assignment should be continued next year	85.7
The Diabetes Shopping Experience should be continued next year	71.5
A training session should have been provided to seminar facilitators to prepare for the nutrition and shopping experience activities	71.5
Facilitating the shopping experience improved my own awareness of the impact that cultural and financial issues have on nutrition and lifestyle	71.5

the seminar sessions. One facilitator commented that students found the exercise revealing and enjoyed talking within their small seminar sessions about their personal challenges of eating well during a week filled with examinations and assignments. Another facilitator commented: "The students were so actively engaged and seemed genuinely changed by the experience. Several students told the group that they had never been in such a culturally diverse grocery store and that they learned so much about how culture, family, and money can play such a huge role in the ways you eat."

DISCUSSION

The Nutrition Journal and Diabetes Shopping Experience activities were successful and comparable to those identified in previous research. Reflections and assessments indicated that students' attitudes and confidence levels improved as a result of the activities. One result was improved empathy. Written reflections of students participating in a 10-day patient empathy modeling activity conducted by Chen et al indicated a greater appreciation of the difficulties patients have with medication adherence and improved empathy towards underserved populations.⁴ Our student reflections indicated a greater appreciation of the difficulties patients have with healthy eating and improved empathy towards patients with diverse cultural and socioeconomic backgrounds. In addition,

in both of our activities, students mentioned how their respective experiences would affect how they would interact with patients. Evans and colleagues reported that incorporating an active-learning geriatric medication game into a required course increased students' understanding and empathy towards geriatric patients.¹⁴ Our study similarly showed that an active-learning activity incorporated into an existing course had positive effects on student attitudes and empathy towards a specific patient population. A second result was improved confidence levels and attitudes regarding health promotion and disease prevention. Two recent publications reported that elective courses offered to smaller groups of students resulted in improvements in student confidence levels and attitudes.^{8,9} However, elective courses likely require more resources than an individual activity within a required course and only target a portion of students within a program.

The nutrition journal and diabetes shopping experience activities were practical, both in terms of incorporating them into the curriculum and providing a relevant training experience for pharmacists. The activities exposed students to realistic situations that they may encounter within their careers and allowed students to see firsthand the relationship between nutrition, culture, and financial status on the management of a disease state.

Including this experience in the curriculum did not require adding course credits or new courses to a curriculum

that already may be saturated. The experience required approximately 2 to 4 hours of in-class time. For the students, the remainder of the execution of the activity takes place outside of the classroom, on the students' own time. For the instructor, the activity required time to evaluate and select a nutrition journaling tool or Web site and develop the shopping experience scenarios. The activity did not require additional facilitator time; however, the majority of facilitators did respond favorably when asked if a training session should be offered. Even if a live training session was not deemed necessary for facilitators, written facilitator guidelines would likely be beneficial.

The basic framework of this activity can be easily transferred to other pharmacy programs, with few modifications. The nutrition journal activity can utilize any of the free and easily accessible online nutrition journaling options. The shopping portion of the experience can be tailored to ethnic groups, disease states, financial issues, and shopping venues particular to the community surrounding the school or college of pharmacy. Being in the heart of Boston, Massachusetts, a culturally diverse, urban area, we were able to select grocery stores within a 5-mile radius that represent the cultural and socioeconomic diversity of Boston. For colleges or schools in less populated or diverse areas, a lack of variety in the types of grocery stores within a reasonable vicinity may provide a challenge. Also, group discussions occurred in small breakout seminars, consisting of 12-14 students. This small group dynamic allowed for active and productive group discussions and personal feedback. Schools that do not include small group courses in their curricula or that have larger class sizes may find it challenging to implement this activity in a large classroom setting.

Several ways to improve the activity were identified. Feedback indicated the need to better drive home the underlying purpose of the activity to students or "close the loop" at the completion. For example, several student evaluations mentioned how the activities affected them and their understanding of their own eating habits and nutrition. Some students commented on how the activities posed an inconvenience to them or took too much time, but often the reflection or evaluation stopped there. If students found the activity inconvenient or challenging, would they be able to translate their own personal experiences into more empathy or compassion for patients who were experiencing the same inconveniences and frustrations on a long-term basis? A final wrap-up discussion about the overall purpose of the activities may have helped address the students' concerns with the hopes of changing the way the students viewed the inconvenience of the activities. In future years, an in-class wrap-up dis-

cussion will be scheduled to better solidify these take-home points and further explore student concerns.

Feedback also indicated that the shopping scenarios with economic or cultural components were the most successful. Based on that feedback, the scenario that included shopping at a higher-end grocery store will be replaced with another ethnic grocery store.

The attitudinal survey results indicate that the assignment did positively impact the students' attitudes about the challenges of adhering to a healthy diet. This was also evident in many of the students' written assignments and reflections, which repeatedly indicated that students were able to develop a new appreciation for the challenges that overweight patients face when trying to adhere to a healthy diet.

This experience did not significantly impact students' attitudes about the role a pharmacist should play in promoting health and wellness or counseling patients about nutrition and lifestyle modifications. However, the results of both the pre- and post-assignment surveys indicated overall positive attitudes about pharmacists' roles, with the vast majority of students agreeing that pharmacists should provide basic nutrition counseling to overweight patients or those with diabetes. It is also possible that some students had not yet been in an environment that allowed them to see the role of a pharmacist in these circumstances. Assessing student attitudes again after completing the fourth professional year to see if their perceptions changed would be useful. Self-reflection and seminar discussions will also be modified to include questions regarding pharmacists' roles, including perceived barriers that pharmacists may face.

Finally, results from the facilitator survey indicate that the majority of facilitators would be interested in attending a training session. Five out of 7 facilitators agreed or strongly agreed that a training session should be provided to help facilitators prepare for the activities. Such a training session could improve the delivery of the take-home message and improve the evaluation process and the feedback that students receive.

There were limitations to this activity. Our goals were to enable the students to become more empathetic, culturally competent, and "economically competent" when working with patients in need of nutrition management, and to promote health improvement, wellness, and disease prevention. Although positive change in students' perceptions and confidence levels were noted, we cannot determine long-term achievement of these goals until we observe students working in environments in which they encounter patients with cultural and economic differences. Simulated patient encounters using standardized patients may be one strategy to better assess these outcomes.

Identifying if, after implementation of this experience, overall improvements are noted on APPE assessments in the areas related to empathy, cultural competence, and health promotion and disease prevention would also be useful. In addition, because the post-assignment survey was voluntary and conducted electronically 5 months after completion of the activity, only one-third of the class completed it. This low response rate with the post-assignment survey warrants cautious interpretation of the student confidence and attitude results because of the potential for selection bias. Finally, the Nutrition Journal activity utilized a Web-based programs to facilitate hands-on application of basic elements of nutrition and healthy eating. Familiarity with these programs may result in students advocating this method of nutrition journaling to future patients which may not be accessible or feasible for many patient populations.

SUMMARY

The Nutrition Journal and Diabetes Shopping Experience helped to bridge an identified gap in our curriculum and more effectively meet our ability-based educational outcomes. The activities targeted contemporary, attitudinal-based outcomes with which many schools are currently struggling, by promoting active-learning, oral and written communication, and self-reflection. In addition, this experience takes learning outside of the walls of the classroom and into the communities that the students may serve when they become pharmacists. Survey responses and comments indicated that the goals of the activities were met. Finally, the ability to incorporate this experience without requiring additional resources makes it both innovative and meaningful.

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Appendix 1. Diabetes Patient Shopping Scenario Example

Scenario 1:

You are the husband/wife of a family of 4. You and your spouse immigrated into Boston from the Dominican Republic 6 years ago. Your spouse has type 2 diabetes and high cholesterol, and you have high cholesterol. Your youngest child has recurrent ear infections, and your oldest child has been told that he is 'pre-diabetic'.

Your family takes the following medications:

Your Spouse (BMI 27):	You (BMI 27):
- Metformin 500mg BID	- Simvastatin 20mg QD
- Atorvastatin 40mg QD	Youngest Child:
- Aspirin 81mg QD	- Amoxicillin 500mg BID
- One Touch Ultra (tests BID)	

The total family income is \$1,250/month plus \$60/month in food stamps. Your rent is subsidized at \$400/month. Your family is covered on BMC Healthnet MassHealth Insurance.

BMC Healthnet MassHealth Copays:

Tier 1 - \$1, Tier 2- \$3

You shop at Hi Lo Foods in Jamaica Plain (415 Centre Street, 02130). It is time to get one week worth of food and all of your family's prescriptions.