

Enhancing Student Confidence in Diabetes Management Skills through Pharmacist-Run Group Classes in a Community Library

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Abstract

Purpose: To evaluate student pharmacists' confidence after providing education within diabetes groups in a non-medical community setting. **Program Description:** Three 8-week diabetes group courses were developed and executed within a local public library. The courses aimed to teach participants with diabetes how to effectively manage their medical condition to prevent future related complications. Student pharmacists were responsible for checking and recording the patients' vitals, assisting in answering questions posed by the participants throughout the session, presenting different medication information each week, and creating a brochure which described the highlights of the specific week's medication class. The student pharmacists were then surveyed regarding their confidence level in providing diabetes education in the future as well as their experience of working within these groups.

Summary: Seventeen student pharmacists participated in three 8-week sessions. The majority of the student pharmacists reported increased confidence in being able to provide diabetes education as well as newfound empathy for persons with diabetes on how to manage their medical condition.

Keywords: diabetes, diabetes group classes, diabetes education, academic service-learning, student pharmacists

Background

Diabetes Mellitus is highly prevalent in the United States, affecting 8.2% of the population in the United States (US).¹ It is the 7th deadliest disease in the US, increasing the risk for cardiovascular disease, kidney failure, amputations, and eye disease.² Once diagnosed, an extensive amount of education is needed for the person to effectively manage their condition. However, time restrictions with their primary care provider often limit their ability to learn how to implement the necessary lifestyle changes needed. The American Diabetes Association Standards of Care support an interdisciplinary team consisting of Certified Diabetes Care & Education Specialists (CDCES; formerly known as Certified Diabetes Educators [CDE]), pharmacists, and other healthcare professionals to be part of the care for the individual with diabetes.³ Unfortunately, not all medical facilities have the funding to offer these resources.

There is considerable evidence showing the benefits of diabetes education group classes to improve outcomes in persons with Type 1 or Type 2 Diabetes.⁴ These classes typically consist of several consecutive weekly sessions led by the CDCES where topics related to understanding and managing diabetes are given to participants who have Diabetes Mellitus. This type of setting not only allows the person to obtain information about their medical condition, but also to share and discuss their personal struggles and successes with managing diabetes.

Pharmacists have a unique advantage to being a CDCES. In addition to being able to competently educate persons on appropriate lifestyle modifications, they are also specifically trained to understand the nuances of medications. Knowing specific mechanisms of action with medicines, pharmacists can easily educate on expected adverse effects plus how to overcome them, identify possible drug interactions, and understand and recommend appropriate monitoring needed for the medications taken to treat this disease state.

It is therefore important to not only train student pharmacists regarding appropriate diabetes management but also to provide the necessary experience in all settings so that they may comfortably provide extensive diabetes education to persons who need them. Student pharmacists who were actively involved in providing diabetes education via group classes in a clinical setting have reported enhanced confidence in diabetes knowledge and skills.^{5,6} However, to date, studies evaluating student pharmacists' confidence in providing group education classes in a community setting are not found.

In efforts to improve access to education about diabetes to all persons in the community who have Type 1 or Type 2 Diabetes Mellitus and do not otherwise have access to formal diabetes education and training with their primary care physicians, a diabetes education course was developed in a local public library. The objectives of the study were to (1) evaluate participants' satisfaction with the diabetes education group; (2) assess improvements in knowledge of diabetes topics discussed; (3) evaluate student pharmacists' confidence after actively participating in education within the diabetes groups.

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This paper will discuss the third objective (Objectives 1 & 2 will be described elsewhere).

Experimental Design and Methods

Two faculty members of St. John's University College of Pharmacy & Health Sciences received a grant from their University's Office of Academic Service-Learning to conduct diabetes group classes at a local library in the urban city of Queens, NY. The authors also received approval from the University's Institutional Review Board. Both faculty members are ambulatory care pharmacists who provide direct patient care in interprofessional settings and precept student pharmacists in their fourth professional year undergoing their ambulatory care Advanced Pharmacy Practice Experience (APPE) at their respective clinical sites. Student pharmacists who were assigned to the faculty facilitators' APPE, were instructed to go to the library's diabetes group session instead of their respective ambulatory care site for at least one afternoon per week where they would participate in the group sessions. The goal of student participation in the diabetes program was to determine if APPE student confidence and knowledge in diabetes management would be enhanced.

An 8-week diabetes group course was developed with a primary goal to teach participants how to effectively manage their diabetes to prevent future related complications. A connection was made with a local library that agreed to provide the space to hold the group sessions. The course was advertised in the form of a flyer that was posted at the front of the library, as well as in emails that were regularly sent to the library's patrons. Community participants who signed up for the course were asked to commit to attending at least 6 classes of the 8-week program. Those who did so were given a \$20 gift certificate to a healthy local grocery store in aims of purchasing healthy food snacks. The class aimed to have a maximum of 10 participants per group so that there would be ample time for discussion and to address each person's questions. Therefore, the intent was to execute this 8-week course three times over the year so that the program may be available to a wider range of partakers.

Each class was two hours long and was held once weekly. Every session consisted of various activities including vitals of each participant (i.e. blood pressure, weight, blood glucose), a short non-intensive exercise video, discussion of the diabetes topic-of-the-week, presentation of a diabetes medication class, and a healthy food demonstration. Student pharmacists were responsible for checking and recording the patients' vitals, assisting in answering questions posed by the participants throughout the session, and presenting the medication class of the week. Student pharmacists also created a brochure which described the highlights of the specific week's medication class.

The blood pressure was taken with an Omron 5 Series Upper Arm Blood Pressure Monitor, the weight was taken using a digital weight scale, and the blood glucose was measured by the OneTouch or Contour Next glucometer. Participants were also

allowed to bring their own glucometer, self-measure, and then subsequently show the students their results to be recorded for the session.

These diabetes group courses served as academic service-learning (AS-L) activities for the student pharmacists. Academic-service learning entails students providing a service that benefits the community and connects to course learning objectives. Students were assessed on their AS-L activities through a formal written or oral reflection on their experience with the diabetes group sessions at the end of their APPE. The reflection was not anonymous and was required to be completed with their respective preceptor by the end of the APPE. The students' reflection entailed describing how their experience impacted their view as a person, a future pharmacist, and their perception in serving this population. They were also asked to participate in an anonymous survey where they were given a series of questions via SurveyMonkey™ to evaluate their perception of their personal skills with assisting patients with diabetes in this group setting in the future. Free-text responses were also collected to justify their answer choices on the survey. Completing the anonymous survey was not mandatory for the student pharmacists.

Results

The 8-week program was held three times between the summer of 2019 and the spring of 2020. Two 8-week classes were completed in their entirety. The third class was stopped at week 4 due to the COVID-19 pandemic's lockdown measures. Seven to ten individuals with diabetes participated in the first group course (summer session), 3-8 in the second group course (fall/winter session), and 7-10 in the third group course (winter/spring session). Not all participants were able to join every one of the eight classes offered in a session, but the majority participated in at least 6 of the 8 classes.

A total of 17 students participated in the three classes held over the said time period; 14 (82%) students completed the surveys. There were eight, six, and four drug class presentations given by student pharmacists in the first, second, and third diabetes group classes, respectively. Drug classes presented by the student pharmacists in each diabetes group class included biguanides, glucagon-like receptor-1 agonists, sodium glucose cotransporter 2 inhibitors, dipeptidyl peptidase 4 inhibitors, sulfonylureas, long-acting insulin, antihypertensives, and statins. A majority of students strongly agreed that their participation in the diabetes classes taught them how to provide education in a group setting (64%) and helped them to learn personally (71%) (Figure 1).

Most students (64%) also made a connection between the AS-L activity and the University's mission to help the underserved. A majority (86%) of students believed that the classes affected their worldview of diabetes management (Table 1). All of the students (100%) felt that these classes may contribute to participants meeting their goals. Lastly, all students (100%) felt

they could apply what they learned from the group classes in the future as a pharmacist. Students also realized that diabetes management is challenging and must be tailored to the individual patient. (Table 2).

Discussion

Our study showed that allowing student pharmacists to actively participate in diabetes group classes that are held in a non-medical setting resulted in greater confidence towards educating persons with diabetes.

Several themes were elucidated from comments that students wrote for these survey questions. First, student pharmacists learned how to effectively communicate and educate in a group setting, being cognizant of utilizing lay terms and addressing all persons' questions and concerns. Secondly, these student pharmacists also reported increased knowledge about diabetes management. Lastly, it appeared from the students' written survey responses that they had developed a newfound empathy on the struggles a person with diabetes endures with effectively managing diabetes. Developing empathy for persons in this group setting may enhance student pharmacists' sensitivity for their struggles in the community, which can lead to careful consideration regarding shared decision making and adherence with medications as well as lifestyle modifications. The students' empathy skills could also be applied towards any complex disease state, allowing them to care for patients more holistically.

Some limitations were noted with this study. To begin with, this intervention was only executed by two faculty pharmacists in one college of pharmacy. Hence, this was a small sample size. Due to the COVID-19 pandemic, our third group session was unfortunately terminated early, only completing four of the eight scheduled classes. Restrictions within the library at that time did not allow us to convert the class virtually. There were an additional four student pharmacists who were slated to have been assigned to the second half of this diabetes group class. It is unknown if the additional four students survey responses would have changed the results in any direction. This analysis also did not have a control group comparing student pharmacists who were not involved in the community diabetes group classes.

Lastly, there was not an official assessment of improved diabetes knowledge with the student pharmacists, such as test questions. However, the assessment of each student pharmacist's overall knowledge in primary care, which included diabetes, was based on the University's set APPE Entrusted Professional Activity (EPA) score in the ambulatory care setting. These scores ranged from one to three. A score of one described the student pharmacist as having some knowledge but unable to operationalize that knowledge, two was defined as the student pharmacist having a broad knowledge-base but needs to be told what to do to correct that performance, and

three was where the student pharmacist was able to demonstrate sufficient knowledge and skills necessary to perform tasks in a manner consistent with an entry-level pharmacist. Since the EPAs assess the students' general knowledge and evaluated their activities within the clinical site as well, they cannot be used to strictly assess their diabetes knowledge. Of note, all the student pharmacists started with either an EPA score of 1 or 2 in the beginning of the APPE and completed with a score of 3 at completion.

Conclusion

Student pharmacists actively participating in diabetes group classes within a non-medical community setting reported increased confidence in being able to provide diabetes education. Future research in this area involving a greater cohort of students should be done to further see if this would enhance their education skills.

The opinions expressed in this paper are those of the authors.

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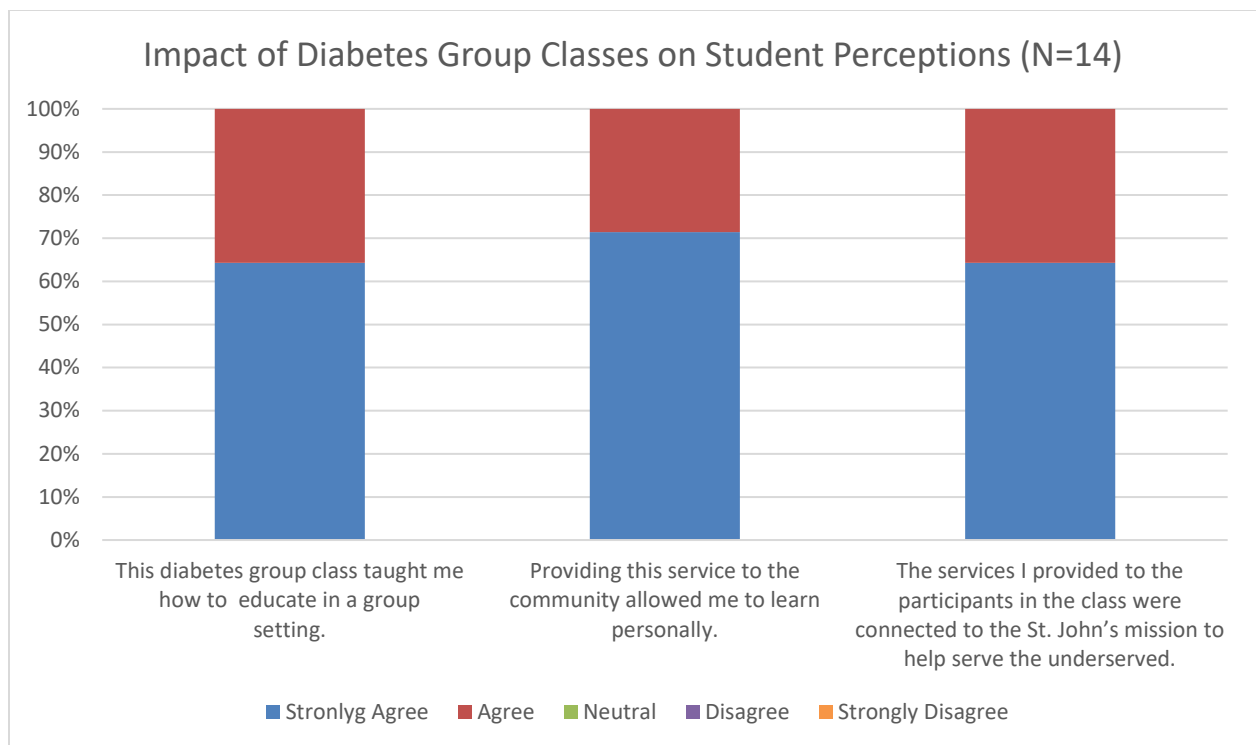
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Treatment of Human Subjects: Approved by St. John's University Institutional Review Board

References

1. Centers for Disease Control and Prevention (CDC). Diabetes Data and Statistics. Available at: <https://www.cdc.gov/diabetes/data/index.html> (Accessed August 16, 2021).
2. Centers for Disease Control and Prevention (CDC). National Diabetes Statistics Report, 2020. Available at: <https://www.cdc.gov/diabetes/library/features/diabetes-stat-report.html> (Accessed August 16, 2021).
3. American Diabetes Association Standards of Medical Care in Diabetes, 2021. *Diabetes Care* 2021 Jan; 44(1): S40.
4. Odger-Jewell K, Ball LE, Kelly JT, Isenring EA, Thomas R. Effectiveness of group-based self-management education for individuals with Type 2 diabetes: a systematic review with meta-analyses and meta-regression. *Diabet Med* 2017 Aug;34(8):1027-1039. doi: 10.1111/dme.13340.
5. Shrader S, Kavanagh K, Thompson A. A Diabetes Self-Management Education Class Taught by Pharmacy Students. *Am J Pharm Educ* 2012 Feb 10; 76(1); Article 13: 1-8.
6. Manigault KR, Augustine JM, Thurston MM. Impact of Student Pharmacists Teaching a Diabetes Self-Management Education and Support Class. *Am J Pharm Educ* 2020 Mar; 84(3); Article 7621: 392-399.

Figure 1. Impact of Diabetes Group Classes on Student Perceptions.**Table 1. Impact of Diabetes Group Classes on Student Perceptions**

Question	Yes	Maybe	No
Has this affected your worldview of diabetes management?	12 (85.7%)	2 (14.3%)	0
Do you feel these classes may contribute to getting these participants to goal with their diabetes?	14 (100%)	0	0
Do you feel you may be able to utilize what you learned from the group classes in the future as a pharmacist?	14 (100%)	0	0

Table 2. Themes Identified from Student Survey Comments

Theme	Supporting Quotes
Communication Skills	<p data-bbox="621 243 1422 302">“I was able to give a presentation on diabetes medications, and I observed how my professors communicated to the public”</p> <p data-bbox="621 342 1422 464">“Taught me how to interact with multiple patients at the same time” “The ability to communicate with other healthcare professionals is different from the ability to educate patients in layman terms, and this opportunity taught me how to perform the latter”</p> <p data-bbox="621 504 1422 562">“The group opened my eyes to how important it is to engage the group in order to teach and educate the participants”</p> <p data-bbox="621 602 1422 661">“I was able to interact with more people in the community and make sure that everyone was able to understand and follow along”</p>
Diabetes Management Skills	<p data-bbox="621 695 1422 753">“This experience taught me how diabetes education in a group would work in real life as opposed to the typical lecture and powerpoint settings”</p> <p data-bbox="621 793 1422 888">“Was able to become more familiar with the lancet device and understand some of the struggles the patients with diabetes need to go through to check their blood glucose levels”</p> <p data-bbox="621 928 1422 984">“Strengthened my understanding of diabetes nonpharmacological and pharmacological therapy”</p> <p data-bbox="621 1024 1422 1083">“This class taught me about food portion sizes and how large portion sizes are these days”</p>
Diabetes management is a challenge	<p data-bbox="621 1121 1422 1243">“Gave me real experience about the daily struggles that diabetic patients have to go through and gave me a glimpse into their thought process; all of which gave me better insight on how to connect with diabetics”</p> <p data-bbox="621 1283 1422 1341">“I never thought about how a patient can’t just “have a healthy diet” and really has to think about every single thing they want to eat”</p> <p data-bbox="621 1381 1422 1440">“Many patients do not fully understand diabetes, or have misconceptions about diabetes”</p> <p data-bbox="621 1480 1422 1539">“Many patients don't get the support they need to best manage their diabetes”</p> <p data-bbox="621 1579 1422 1638">“As someone without diabetes, this class has shown me how difficult diabetes management can be.”</p>
Tailor diabetes management	<p data-bbox="621 1671 1422 1766">“This completely helped me to understand that patient goals in diabetes is not clear cut and one way. It's entirely influenced by patient's preferences, motivation, and drive.”</p> <p data-bbox="621 1806 1422 1864">“I saw diabetes management in a new light in the sense that I saw it more from a patient’s point of view.”</p>