Title:
Group-Based Diabetes Self-Management Education Program to Improve Patient Health Outcomes

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References:
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Abstract Summary:
Diabetes control is an ongoing problem at an underserved clinic in Central Illinois. Diabetic patients referred to an educator follow-up at their discretion, while 15-minute appointments are inadequate to address all their needs. A 12-week group education was conducted, showing improvement in HgbA1c, increased diabetes knowledge and promoted social support.
Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
The learners will be able to evaluate the impact of group education in increasing patient involvement and diabetes self-care management.	Explain the content of the project to learners to meet this objective.

The learners will be able to understand the effect of diabetes self-management on improving patient outcomes after the 12-week diabetes education.	Discuss the results of the 12-week group education to learners in order to meet the objective.

Abstract Text:

Background: Type 2 Diabetes Mellitus (DM2) affects approximately 285 million people worldwide (Acharya et al., 2012). In the United States, DM 2 affects 29.1 million people and is the seventh leading cause of death (Office of Disease Prevention and Health Promotion [ODPHP], 2014). Poor health literacy, gaps in education, and a lack of awareness concerning available community resources cause poor DM2 management (Maindal, Skriver, Kirkevold, Lauritzen, & Sandbæk, 2011). In regards to the incidence of DM2, one of the goals of Healthy People 2020 is to decrease the percentage of the adult U.S. diabetic population that have a HgbA1c of >9%, from the current 18% to a target of 16.2% of the diabetic population (Office of Disease Prevention and Health Promotion [ODPHP], 2016). The prevalence of DM2 in a small urban city in Central Illinois increased from 7.3% in 2004, to 9.6% in 2013 (Centers for Disease Control and Prevention [CDC], 2016). Blood glucose control and medication non-adherence are ongoing problems at a primary care clinic in the urban community in Central Illinois, serving a largely minority and underserved population (K. Endress, personal communication, October 8, 2015). From 2011 to 2015, 20-30% of the clinic's DM2 patients had an HgbA1c > 9% (K. Endress, personal communication, October 8, 2015). Currently, 15-minute office encounters are inadequate to address patient's needs and DM2 patients are referred to a diabetes educator; allowing patients to follow up at their own discretion. Group educational visits allow patients to learn more about their condition while establishing peer support. This reduces the burden on provider appointments for the same purpose (Burke & O'Grady, 2012). Group visits also offer a venue to discuss diabetes self-care management techniques and answer questions not otherwise covered in a 15-minute patient encounter. Through these group appointments, patients benefit from social support, a better understanding of DM2, gain familiarity with community resources all while encouraging patient involvement (Burke & O'Grady, 2012).

Purpose: To implement a group-based, diabetes self-management education [DSME] program to address gaps in the education and improve diabetes management of patients with an HgbA1C >9% in a small urban city in Central Illinois.

Subjects: Participants were adults diagnosed with DM2 with an A1c ≥ 9% at the time of recruitment from an underserved clinic in Central Illinois.

Design and Methods: Implementation of a group based- DSME for 12-weeks, one to two hours per week led by the project investigator. Pre and post-intervention HgbA1c's [A1c's] and a 16-item Likert scale questionnaire, assessing blood sugar control and diabetes self-care management were measured. Sociodemographic factors (i.e., age, gender) and BMI, along with a post-education subjective survey were also collected.

Procedure: The sessions were held once per week, one to two hours for 12 weeks. The intervention included education on: factors that increase incidence of diabetes, information on diet, exercise, complications, self-management techniques, and social support. The program also invited guest speakers. These included dietetic interns who discussed nutrition, calorie counting, and gave a guided grocery tour. An exercise trainer from a community gym talked about importance of working out and ways to modify exercises based on the participants' capabilities. Lastly, a well-controlled diabetic patient who lives in the community talked about how he achieved control over his diabetes. In each session, the participants were given complimentary healthy snacks and water, and were encouraged to make comments, recommendations and ask questions throughout the group sessions. At the end of each session, there was an opportunity for the participants to bring up their concerns, questions, suggestions for topics of discussion for the next session, and takeaways on what they learned for the day. The

participants were compensated with free bus passes for each session (as needed), snacks, drinks, and a $20 local grocery gift card for those who attended at least 10 out of the 12 sessions.

Analysis: Data were collected prior to and at the end of the 12-week intervention. A Paired Sample t-test, a Wilcoxon Signed Rank Test and a Descriptive analysis of aforementioned data were run through IBM SPSS version 22 to ensure that the data gathered met statistical expectations.

Measurements: Eight participants aged 18-65years, were recruited for the group-based diabetes education sessions. Participants were offered education on different topics including diabetes pathophysiology, exercise, nutrition, and other modifiable factors that are important in the proper control of DM2 during the sessions. Additionally, important community resources were identified and offered during the sessions (e.g. grocery store tours, personal trainers, bus vouchers, etc.) to afford better access to the available resources in the area. A1c and diabetes self-management questionnaires [DSMQ] were obtained prior to and after the 12-weeks of education. Lastly, a subjective post-education five- question survey was provided to determine the personal gain of participants from the class and any recommendations after the program.

Results: Eight participants were successfully enrolled for the 12-week program. Five out of the eight participants attended a couple of sessions and three out of the eight participants finished at least 10 out of the 12 sessions. Prior to the 12-weeks of diabetes education, the A1c's of the eight participants ranged from 9.1% -13.1%. After the 12-week sessions, five participants had their post-A1c's measured, and showed a decrease in A1c's ranging from 0.3% - 2.1%. The statistical analysis was completed for both A1c and DSMQ differences for pre and post-education. For the A1c levels, the paired t-test of the five participant's revealed the following: Mean difference of 1.10 (95% CI, 0.06 to 2.13), $t = 2.94$, $df = 4$, and a p-value of < 0.05. A Wilcoxon Signed Rank Test of the DSMQ sum-scale and sub-scales revealed no significant difference in the pre and post self-management techniques of three participants following the 12-week education. However, the three participants indicated on their post-education subjective survey that they learned new topics from the education program (i.e. portion control, food label reading, medication management, and how diabetes develops) and one participant stated that she gained new support from people in the class having the same condition.

Conclusion: As indicated through the literature, group education can have a significant impact in A1c improvement. Although, the DSMQ did not reveal any difference in self-reported diabetes techniques, our project using group-based DSME reported promising results in increasing patient motivation to improve health, engages community/social support, and provides better clinical outcomes through a significant decrease in A1c levels. Most importantly, the post-education survey revealed an increase in diabetes education and better appreciation for social/community support in self diabetes management.

Implications: The 12-week group education showed that when diabetic patients further their education and gain social support in diabetes management, they will see significant improvement in their A1c levels, leading to healthier lives.