Doctor of Nursing Practice Projects                                     School of Nursing

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# Diabetes Education

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**Abstract**

**Background:** Diabetes Self-Management Education (DSME) has been shown to improve diabetes management. However, a Midwest academic clinic does not offer formal diabetes education. The health department offers formal diabetes education classes twice a year. However, the classes are not flexible, long, and offered infrequently. **Objective:** The purpose of this project is to improve access to and standardize DSME for patients newly diagnosed with type II diabetes. **Methods:** The project design includes a one group pre-test/post-test convenience sample of adult patients who are newly diagnosed with type II diabetes in an academic outpatient setting. **Results:** At the time of diagnosis, the average A1C was 8.4%, with a range of 6.6% to 12.5%. The average BMI at the time of the education was 38.86. The range of starting BMI was 26.83 to 50.17. At the 3 month follow up appointments, the average A1C was 6.8%, with a range of 6.3% to 7.4%. The average BMI was 37.15, with a range of 26.96 to 46.74. **Conclusions:** A1C improved for 4 out of 5 patients, while BMI improved for only 1 patients. A change in diet and starting medication should produce an improvement in A1C.

# Introduction of the Problem

Diabetes mellitus (DM) is a complex, chronic disease involving insulin dysfunction and an increase in blood glucose, which if not controlled, leads to damage of the heart, nerves, eyes, and kidneys. According to the American Diabetes Association, (ADA), (2016) 9.3% of the United States (US) population has diabetes. Early identification of type 2 DM in the outpatient setting is crucial to improving care and decreasing the annual cost of diabetes and diabetes complications.

The local county health department offers diabetes education courses twice a year. The problems with the program are that it is not flexible, it is long, and it is offered infrequently. The small, academic family medicine clinic where these project was completed does not offer formal diabetes education. The education for patients diagnosed with diabetes is left up to the individual provider. The provider who diagnoses the patient may not even be the primary care provider for that patient. Therefore, the education may not be completed. Office visits are short and do not allow for thorough education. Ideally, patient at the clinic will receive diabetes education within 2 weeks of being diagnosed with DM. A standard education session must be developed and implemented. In order to accomplish this goal, a single provider would do all of the initial diabetes education. That provider would be allotted enough time to educate the patient and family as well as answer any questions that may arise.

# Literature Review

## Type II Diabetes Mellitus

Type II DM accounts for between 90-95 percent of all cases of diabetes. Type II DM is a metabolic disorder that occurs when fat, muscle, and liver cells stop using insulin to carry

glucose to be used for energy and insulin resistance occurs (Blair, 2016; CDC, 2016; Drayton-Brooks, 2013; HHS, 2013).

**Diabetes Self-management Education and Support**

The American Association of Diabetes Educators (AADE) in coordination with the ADA define DSME as a process of promoting the "knowledge, skill, and ability" needed for self-care of diabetes with the use of evidence-based research (Powers et al., 2015). They define DSMS as the support needed to enact and maintain the skills and actions needed to self-manage diabetes (Powers et al., 2015). Initially, DSME should be performed by a healthcare professional and then other qualified personnel in the office or community can do the education. DSME incorporates the patient's healthcare beliefs, culture, healthcare knowledge, health literacy, diabetes knowledge, economic status, physical limitations, support system, medical history, and physical abilities into the development of their individual education. DSME should include clear goals, plans for progress, and appropriate treatment plans for each individual (ADA, 2017; Brunisholz et al., 2014; Powers et al., 2015).

DSME has been shown to decrease diabetes cost by reducing hospital admissions and readmissions. It has also been shown to improve A1C, reduce diabetes complications, and improve implementation of lifestyle changes (Brunisholz et al., 2014; Chrvala, Sherr, & Lipman, 2016; Powers et al., 2015). According to the ADA, (2017) DSME should be performed at the time of diagnosis, annually, when complicating factor occur, and with transitions in care. The initial session should include glucose monitoring, diet, medication options, exercise recommendations, identification of complications, preventive care, and strategies for implementation of lifestyle changes. Annually, the treatment goals should be discussed along with preventive care and ways to reduce complications (ADA, 2017).

**Diabetes Lifestyle Modifications**

An active lifestyle can reduce the complications related to diabetes. Gentle aerobic exercises, including walking, swimming, and biking, are the best for people with diabetes (UTD, 2016). Exercise can also decrease body weight, hypertension, hyperlipidemia, and improve cardiovascular wellbeing.

## Project Methods

The overall purpose of this project is to standardize the implementation of diabetes education for adult patients aged 18-64 newly diagnosed with type II diabetes to assess whether there is a decrease in A1C and BMI. The project design includes a one group pre-test/post-test convenience sample of adult patients who are newly diagnosed with type II diabetes in an academic outpatient setting. The pre-test/post-test will evaluate A1C and BMI. The intent is to educate newly diagnosed patients and their family on diabetes, including the disease process, medications, complications, diet, exercise, and recommendations based on the Chronic Care Model (CCM).

The objectives of the project include: to provide standardized education of the newly diagnosed type II diabetics, increase understanding of the management of type II diabetes, and to monitor if the education helps decrease A1C and BMI. The outcome will be measurements will be the pre and post A1C and BMI. Participants in the education sessions will self-report demographic data at the time of the session. There is no risk to the subject for participating in these education sessions. The subject will be identified by the educator by referral from a healthcare provider. The subject will be asked if they would like to participate in a diabetes education session.

**Evaluation**

A total of 6 patients attended the diabetes education session implemented during this project. Of those 6 patients, 1 was lost to follow up during the project timeframe. There were 2 female and 4 male patients who attended the sessions. The mean age of the patients was 53.6 years. There were 5 Caucasian patients and 1 Hispanic patient. There were 5 married patients and 1 divorced patient. Four of the patients were employed, 1 was retired, and 1 was unemployed.

At the time of diagnosis, the mean A1C was 8.4%, with a range of 6.6% to 12.5%. The mean BMI at the time of the education was 38.86. The range of starting BMI was 26.83 to 50.17. At the 3 month follow up appointments, the mean A1C was 6.8%, with a range of 6.3% to 7.4%. The mean BMI was 37.15, with a range of 26.96 to 46.74.

**Impact on Practice**

The anticipated impact of this project on the clinic is overall to improving access to diabetic education. This was done by having a flexible schedule for education sessions along with giving the patients the ability to bring someone to the education session. In turn, the patients will have improved diabetes control and BMI by implementing lifestyle modifications. This project also allows providers the opportunity to schedule their patients for individualized, yet standardized diabetes education.

**Conclusions**

Five out of six patients returned for their 3 month follow up appointment. At that time, the A1C improved for 4 out of 5 patients. However, BMI only improved for 1 patient. The changes may have been based on medication compliance and dietary changes. However, teacher

bias must be considered for future projects. There must be evaluation to determine if the A1C improved due to the educators focus on medication adherence and dietary changes. Further projects should be performed to determine if the A1C and BMI were improved again at the 6 month follow up. The improvement in A1C is likely due to the fact that patients were unaware of their diabetes before the education sessions. A slight change in diet and starting medication should produce an improvement in A1C. The increase in BMI could be due to the timing of the project. Patients tend to be less active in the winter. Patients were scheduled for education sessions within one week of the request.

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