Do Diabetic Education Sessions Improve Clinical Management? A Retrospective Analysis

A Quality Improvement Study

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Introduction

- According to the Centers of Disease Control and Prevention (CDC), 34.3 million Americans are currently living with Diabetes Mellitus (DM).1
- The American Diabetes Association states that almost 50% of people with diabetes do not follow the recommended target of <7% for glycated hemoglobin (A1C).2
- Additionally, racial and ethnic minority groups face disproportionately higher prevalence rates of diabetes, worse diabetic control and higher rates of complications than the general population on average.3
- However, studies have shown that every percentage point drop in Hb A1C levels can reduce the risk of microvascular complications of diabetes by 40%.4
- Diabetes Self-Management Education (DSME) has been established to play an integral role in the care for diabetic patients and has been shown to result in a statistically significant decrease in A1C levels.5

Objective

- The purpose of our study is to examine Diabetic Self Management Education (DSME) as a tool to improve the quality of diabetes care in an underserved patient population through retrospective analysis.
- The primary outcome of the study is to analyze improvement in HbA1c (A1C) and secondary outcomes including changes in body mass index (BMI), compliance with annual eye and foot examination and other diabetic variables.

Methods

Study participants:
- Patients seen in an urban, underserved internal medicine resident clinic in Southern New Jersey between July 2019 and December 2019.
- Inclusion criteria: individuals who were diagnosed with diabetes and received at least one DM education session, and had a baseline A1C along with either a 3 month or 6 month follow-up A1C documented.
- Exclusion criteria: individuals with no DM education, no shows or patients with only one documented A1C with no follow up value.
- Experimental group: all participants who received DM education and who had an improvement in A1C along with those participants who had no improvement or worsening A1C. (N=40)
- Control group: all participants with no DM education, with improvement or worsening A1C. (N=15)

Data was collected on the following variables:
- Baseline A1C, 3 or 6 month follow-up A1C
- Baseline and follow-up BMI
- Annual eye and foot examinations
- Use of statins, oral hypoglycemic agents, insulin
- English as the patients’ primary language or use of interpretation services
- Level of diabetic importance reported by the patients

Results

Primary outcomes:
- In the diabetes education group, the average baseline HbA1C was 10.1 and the 6 month follow-up HbA1C was 8.7, while the total change in HbA1c was -1.35.
- Figure 1: There was a general trend of decreased A1C as diabetic importance was rated higher.

Secondary outcomes:
- Figure 2: Changes in BMI was -0.149 in experimental vs. 0.056 in control.
- Figure 3: Eye examination was 36.9% and foot examination was 50%.
- Figure 4: Statin was 78% in experimental vs 63% in control, insulin was 73% in experimental vs 75% control, and oral diabetic drug was 71% in experimental vs 44% in control.

Role of language:
- The role of language was also analyzed. In which 43.9% of the diabetes education population used an interpreter while 13.6% did not use an interpreter and did not have English as their primary language.
- Figure 5: Those with English as a first language had a change in A1C of -1.77 vs. non-English speakers -1.07.

Discussion

Meeting with the diabetic educator had a notable impact on several of our indicators:
- Patients in the experimental group experienced a decrease in A1C levels more than 3x greater than the control group.
- Subjects who received the diabetic educator were more likely to receive a statin and an oral diabetic medication and were as likely to be on insulin.
- There was no significant difference between BMI in the experimental and control groups, indicating that the primary drivers of improved blood glucose control were medication-based.
- The larger decrease in A1C and compliance with prescription medication may be a direct correlation to the positive influence of the DM educator on patients.
- Providing a referral to DSME may have also impacted physician clinical decision-making as shown by increased adherence to evidence-based medicine prescription guidelines.
- Additionally, patients with a higher diabetic importance score had, on average, larger decreases in A1C, indicating that internal motivation was predictive of improved control of blood glucose.

Diabetic education may have an even greater effect on patients if the sessions were conducted in their native language.
- While there was a significant decrease in A1C levels in patients whose first language is not English, this change was 45% lower than that seen in patients with English as a first language.
- Use of an interpreter for patients whose first language is not English did not significantly impact A1C.

Study Limitations
- The major limitation of this study was an asymmetry of point of care testing for control patients versus experimental patients, leading to disqualification of the majority of controls resulting in a very limited control group.
- This death of control data impacted the significance of the comparison of the two groups.
- Although results show an improvement in all of the diabetic variables analyzed, statistically significance might not have been achieved due to limited sample size.

Future Directions

- We encourage clinical practitioners to assess newly diagnosed and chronic patients’ individual needs and goals for referral to diabetic educators at any point of their care.
- We recommend scaling up the provision of one-on-one DSME sessions in patients’ native language such that patients may achieve better glycometric control, utilize preventative care and control their diabetes.
- We recommend the incorporation of automated alerts within electronic medical record systems to prompt clinical practitioners to adhere to the completion of annual foot and eye examinations.
- We recommend further research on effective methods of integrating weight management into DSME for patients with DM who are obese or significantly overweight.
- We also highly recommend future studies to be conducted with a greater number of participants to increase the validity of the study.

References: