ANALYSIS ON THE EFFICACY OF DIABETES SELF MANAGEMENT EDUCATION AMONG AN UNDERSERVED POPULATION

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BACKGROUND

Diabetes mellitus is a common and serious disease afflicting over 30 million people in the USA. It directly caused 80,000 deaths in 2015 and was a contributing factor to over 250,000 more. Diabetes will primarily manifest with altered blood sugar; but its complications include nerve damage, kidney damage, blindness, ulcers, infection, heart disease and stroke. In 2014 there were 7.2 million hospitalizations and 1.4 million emergency room visits for diabetes related complications amounting to $245 billion dollars in health care expenditures.

Individuals of lower socioeconomic status bear a disproportionate burden of diabetes. Reduced access to regular doctor’s visits, healthy food and safe places to exercise results in a higher rate of occurrence and increased mortality compared to higher-income patients.

Diabetes currently has no cure, and management must involve a thorough combination of medications, diet control, exercise, and regular follow-up with a physician. Diabetes Self Management Education (DSME) programs have been designed to improve the self-efficacy of patients with diabetes, helping them to learn to better control their disease.

METHODS

Subjects were recruited through a chart review at the St. Vincent de Paul free medical clinic between July and September of 2017. Patients ≥18yo who have diabetes were invited to attend the DSME program. Those who attended the DSME program are referred to as the treatment group. Those who did not attend the DSME program are referred to as the control group.

Baseline characteristics: Group Age Sex BMI A1c Language Ethnicity Months since diabetes diagnosis

<table>
<thead>
<tr>
<th>Group</th>
<th>Age</th>
<th>Sex</th>
<th>BMI</th>
<th>A1c</th>
<th>Language</th>
<th>Ethnicity</th>
<th>Months since diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>55.4 ± 7.2</td>
<td>49%</td>
<td>51%</td>
<td>9.4 ± 2.15</td>
<td>94%</td>
<td>Hispanic</td>
<td>20.2 ± 19.7</td>
</tr>
<tr>
<td>Control</td>
<td>28.2 ± 6.8</td>
<td>44%</td>
<td>56%</td>
<td>9.1 ± 2.43</td>
<td>96%</td>
<td>White</td>
<td>18 ± 7.51</td>
</tr>
</tbody>
</table>

Inclusion Criteria:
- Patients ≥18yo who have diabetes
- Attended at least one primary care visit for diabetes
- Had been transitioned from the clinic ≥6 months prior

Exclusion Criteria:
- <18yo, attended <3 DSME classes, had DM but did not have primary care in the clinic
- The treatment group consisted of participants who had attended ≥4 of the 7 classes with the DSME program.
- The control group consisted of participants who did not attend any DSME classes.

Results: Subjects were compared using change in A1c, BMI, and self-efficacy. A1c was compared using the following criteria: A1c ≥8% at baseline, A1c ≤8% at follow-up.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment Mean ± SD</th>
<th>Control Mean ± SD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1c ≤8%</td>
<td>96%</td>
<td>4%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Blood Pressure &lt;140/90</td>
<td>94%</td>
<td>56%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>ACE Inhibitor</td>
<td>94%</td>
<td>52%</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

RESULTS

CONCLUSIONS

Overall, the DSME program was found to significantly affect the long-term diabetic control among patients who attended. 46% of patients who attended the class were found to have good diabetic control compared to only 19% among those who didn’t attend.

A subject who attended the DSME program was found to be:
- 3.6 times more likely to have good overall diabetic control (P=0.052)
- 16 times more likely to have good control when taking into account age, sex, BMI, A1c, BP, ASA, Statin, ACEI (P=0.052)
- 2.4 times more likely to have a healthy A1c (P=0.02)
- 1.9 times more likely to have a healthy blood pressure (P=0.04±0.13)
- 1.3 times more likely to have healthy exercise and diet (P=0.30, 0.01)

DISCUSSION

The results of the study show that attendance to a DSME program more than doubled an individual’s odds of maintaining good diabetic control. The design of the study did not measure the rates of diabetic complications, but with the assumption that the changes in metrics could even cause a 10% reduction in adverse events, then this type of education nationwide could prevent 33,000 deaths each year and reduce yearly healthcare costs by $24.5 billion. Although the results of the study were significant, it should be noted that only 46% of patients in the treatment group achieved good diabetic control. This is not an ideal number, and changes have been made to the SVM primary care clinic so patients will be transitioned in a more effective manner to ensure continuity of care at the clinic they follow up at.

Weaknesses of the study include:
- A small sample size
- Bias in motivated patients vs patients looking for medical care
- Short interval to follow up. 5 years post intervention would be ideal
- Change in leadership in the clinic
- Not generalizable

Acknowledgements

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References