Diabetic Diet Education: Addressing Patients and Providers
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Background
  - Utah, Rhode Island, and Colorado had the lowest diabetes incidence, with Colorado’s incidence being 7.9% of the state’s population.
  - In a least-to-greatest ranking of diabetes incidence in cities across the US, Colorado Springs ranked 23rd, with a diabetes incidence of 8.7%.
- Primary care providers manage the care of many patients with diabetes.
  - Management tools include lifestyle modifications (i.e. diet and exercise) and medications.
- A 2017 randomized control trial conducted in the UK (DiRECT trial) showed that diet restructuring and a 15 kg weight loss allowed nearly half the study participants to return to a non-diabetic state after 1 year of participating in the intervention.
- However, from my experience during clinical rotations, lifestyle changes, and specifically diet changes, seem difficult to implement. I wondered if inadequate education on a diabetic diet is contributing to a lack of adherence to a diabetic diet.

Objectives
- To assess the impact of diet education on patients, a random sample of 30 diabetic patients was provided verbal diabetic diet education.
- To assess provider knowledge of diabetic diet recommendations, a random sample of 8 providers were quizzed on current diet recommendations by the American Diabetes Association (ADA).

Program Description

Addressing Patients
- From the patients seen at Dr. Victoria Mallon’s clinic (Mountain View Medical Group) and Dr. Patrick Miller’s clinic at (UCHealth Internal Medicine Clinic), a random sample of 30 diabetic patients was selected.
- Initial interaction:
  - Current knowledge and adherence to a diabetic diet was assessed through a verbal questionnaire.
  - Brief verbal diabetic diet education was provided.
- Follow-up: Patients were called 1 week after the initial encounter to assess if they had made any changes to their diet after receiving the verbal education.
- Chart review was performed to obtain patients’ age, sex, most recent hemoglobin A1c (HbA1c), and the glucose lowering medications they are on.

Addressing Providers
- To assess provider knowledge of diabetic diets, 8 hospitalist and primary care providers were given a 5-question quiz on current diabetic diet recommendations set out by the ADA.

Interventions

Diabetic Diet Education for Patients (based on ADA recommendations)

DO:
- Eat 3 well-balanced meals a day and a small snack at night. Each meal should contain both carbs and protein.
- When planning meals, select a variety of foods from each food group, and watch your portion sizes.
- Increase your fiber intake. Choose wholegrain breads and cereals. Eat plenty of vegetables, and choose whole fruits instead of fruit juices.
- Do not skip meals. Meals are best spaced 4 to 5 hours apart.
- Reduce fat intake by baking, broiling, and grilling your foods, and using low-fat foods.

DON’T:
- Limit your intake and portion sizes of high-sugar foods to 2 or 3 times a week or less. These includes limiting added sugar, fat, and refined grains.

Quiz for Providers

1) Which diet has been shown to improve cardiovascular risk factors in individuals with diabetes?
   a. Mediterranean (with the addition of nuts)
   b. Vegetarian
   c. Low fat
   d. Low carbohydrate
   e. DASH
2) Protein restriction is recommended for individuals with diabetes and diabetic kidney disease.
   a. True
   b. False
3) Omega-3 fatty acid supplements are cardioprotective in individuals with diabetes.
   a. True
   b. False
4) What is the optimal fiber intake for a diabetic patient?
   a. Less than the recommendation for the average person (<20 g)
   b. Same as the recommendation for the average person (20-35 g)
   c. Greater than the recommendation for an average person (> 50 g)
   d. Inconclusive
5) A diabetic patient should reach for a sucrose-containing food instead of an isocaloric carbohydrate-based alternative.
   a. True
   b. False

Results

Table 1: Diabetic Education Conducted in a Primary Care Setting (n = 30)

<table>
<thead>
<tr>
<th>Demographics and Baseline Data</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Average Age (min. max) 64 1 yrs (37, 86)</td>
<td>70%</td>
</tr>
<tr>
<td>% Female</td>
<td>70%</td>
</tr>
<tr>
<td>Average HbA1c (min. max) 7.5 (5.5, 10.6)</td>
<td>46.7%</td>
</tr>
<tr>
<td>% of pts with HbA1c &gt; 7</td>
<td>80.0%</td>
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<tr>
<td>Currently on medication for glucose control</td>
<td>83.3%</td>
</tr>
<tr>
<td>Have you ever been educated on the details of a diabetic diet?</td>
<td>66.7%</td>
</tr>
<tr>
<td>Do you follow a diabetic diet?</td>
<td>66.7%</td>
</tr>
<tr>
<td>Of those that have been educated on a diabetic diet, do they follow a diabetic diet?</td>
<td>66.0%</td>
</tr>
<tr>
<td>Following Intervention</td>
<td>20.0%</td>
</tr>
<tr>
<td>Did you change your diet in some way after receiving brief verbal education about a diabetic diet?</td>
<td>33.3%</td>
</tr>
<tr>
<td>Of those who were not previously following a diabetic diet, how many changed their diet following the intervention?</td>
<td>(2 people)</td>
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Discussion
- 33.3% of participants changed their diet in some way following verbal education, suggesting that initiating the discussion of diet with diabetic patients does in fact lead to change in lifestyles.
- The average quiz score for providers was 38%, suggesting that provider education on diabetic diets can be improved.
- Future cycles of this project could include paper surveys to assess diet habits and attitudes. A paper handout can be provided as an adjunct to verbal education.
- Refining the patient cohort to include individuals with a HbA1c greater than 7 and tracking HbA1cs following diet education can be studies further down the line.