Hemoglobin A1C Improvement in African-American Diabetics through Healthy Cooking Techniques

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Aim Statements

• Global Aim
  • Identify racial disparities in hemoglobin A1C control
  • Reduce percent of African-American patients with hemoglobin A1C greater than 9%

• Specific Aim
  • Identify 10 VMG Edenton primary care patients with hemoglobin A1C > 9%
  • Improve A1C control by 25% through patient education by December 2018
What is Diabetes Mellitus?

- Type 1 diabetes
  - Pancreas no longer produces insulin
- Type 2 diabetes
  - Person’s insulin is ineffective
- Most cells require insulin to take glucose from the blood and convert it to energy
- Hemoglobin A1C of 9% or higher is considered uncontrolled (average glucose of 212 mg/dL)
Why Diabetes Mellitus?

• Affects 30 million Americans
• 2 million new diagnoses per year
• Disproportionately impacts Black Americans
  • Almost twice as likely to develop diabetes as Non-Hispanic Caucasians
• 262 diabetic patients
  • 31 had a hemoglobin A1C above 9% (average blood glucose ≥ 212 mg/dL)
  • 55% of uncontrolled diabetics were African-American
• Only 1 of 6 surrounding counties has more than one grocery store
  • Bertie, Chowan, Gates, Perquimans, Tyrrell, and Washington counties
Participants

Inclusion Criteria
1. Self-identifies as Black or African-American
2. At least 21 years old
3. Has had 2 consecutive A1Cs above 9%
4. Last A1C was on or after January 15, 2018
5. Taking at least 2 diabetes medications

Exclusion Criteria
1. Documented psychotic disorder
2. Known hemoglobinopathy
3. Chronic corticosteroid use
All patients had a VMG primary care physician
All patients on an acceptable medication regimen
But still uncontrolled based on A1C

What else could they possibly need???
Cook Smart, Eat Smart

• Curriculum offered through the North Carolina Cooperative Extension
• Targeted to adults and teens
• Curriculum goals:
  • Plan and prepare healthy meals at home
  • Stay on budget with food choices
• All sessions are “hands-on”
Session 1

• Diabetes basics course
  • What is insulin and what does it do?
  • What is a carbohydrate?
  • What is a hemoglobin A1C and why is it important?
  • What are the signs of hyperglycemia and hypoglycemia?
  • How to I read a nutrition facts label?
  • How does my medicine work?
<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 2</td>
<td>Kitchen basics</td>
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<tr>
<td></td>
<td>Disinfection procedures, safe cutting/chopping, and safe food handling</td>
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<tr>
<td></td>
<td>Techniques for roasting, marinades, stir-fry, and rice</td>
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<tr>
<td>Session 3</td>
<td>Grocery store tour</td>
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<tr>
<td></td>
<td>How to choose healthy and cost-effective options while grocery shopping</td>
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<td>Techniques for grilling, baking, crock-pot use, and one-pot meals</td>
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<tr>
<td>Session 4</td>
<td>Techniques for steaming, packet cooking, sautéing, and making soups</td>
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<tr>
<td>Session 5</td>
<td>Techniques for making salads, salad dressing, simple appetizers, quick breads, pasta, and eggs</td>
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</tbody>
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Results

• Ten participants invited
  • Four attended the first two classes
  • Three participants completed the program
• Hemoglobin A1Cs checked 6 weeks after course completion
  • All 3 participants reduced hemoglobin A1C
  • Two participants reduced their hemoglobin A1C below 9% for the first time since diagnosis
Results

Participant Hemoglobin A1Cs

<table>
<thead>
<tr>
<th>Patient</th>
<th>Pre-Course A1C</th>
<th>Post-Course A1C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>14.0%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Patient 2</td>
<td>12.0%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Patient 3</td>
<td>10.0%</td>
<td>8.0%</td>
</tr>
</tbody>
</table>
• Course attendance would likely be higher with more medically-compliant patients
• Many long-term patients with diabetes do not understand their disease
• A significant number of patients with uncontrolled diabetes could improve their health with hands-on diet and cooking education.
• The Cook Smart, Eat Smart curriculum can be taught in any medical clinic, church, or other building with power outlets and a sink.
"It wasn’t really insulin. You don’t have diabetes yet. It was just a warning shot."
• Cook Smart, Eat Smart. https://www.eatsmartmovemorenc.com/CookSmartEatSmart/CookSmartEatSmart.html.


"My diabetic research shows that test subjects are 98% more likely to take their diabetic pills if the pills are covered in chocolate."