Behavioral Counseling Promotes Diet Quality and Cardiovascular Risk Factors in Residents of Rural Appalachia

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**BACKGROUND**

- Cardiovascular disease remains the leading cause of death across the U.S. and across Kentucky, despite improvements in recent decades.
- Kentucky is ranked 6th in terms of heart disease mortality in 2012 (208.2 per 100,000; U.S. average: 170.5).
- U.S. Preventive Services Task Force recommends that adults who are overweight or obese and have additional cardiovascular disease (CVD) risk factors be offered intensive behavioral counseling that includes a healthy diet to promote CVD prevention.

**PURPOSE**

- To determine the impact of an intensive CVD risk factor self-management intervention that included strategies for improving diet quality on the level of Healthy Eating Index (HEI) and CVD risk factors in adults at high risk for CVD living rural Appalachian.

**METHODS**

- Randomized waitlist-controlled trial.
- A prospective 6 month Individualized education and goal setting intervention to promote healthy lifestyles that included diet modification.
- Eligibility: 1) resident of 1 of 4 counties in Eastern Appalachian Kentucky; 2) having CVD or at least 2 of the following CVD risk factors: age men > 44 and women > 55 years, family history of CVD, history of hypertension, abnormal lipids, or diabetes, body mass index > 25 kg/m², diet high in saturated fat or low in fruits and vegetables, or sedentary life style.
- No history of any disease that required specialized diets or interfered with lipid metabolism.
- Recruited from a community center and an Federally Qualified Health Center in Eastern Appalachian Kentucky that served the 4 county region.
- Data were collected at baseline and post-intervention by trained research nurses (Table 1).

**RESULTS**

- Characteristics of participants who completed the intervention (Table 2).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean ± SD or N (%)</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>M = 64 ± 14</td>
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<tr>
<td>Race (Caucasian)</td>
<td>68.9% (969)</td>
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<tr>
<td>Married/co-habitant</td>
<td>513 (71%)</td>
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<tr>
<td>Born in Kentucky</td>
<td>494 (69%)</td>
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<tr>
<td>Years live in Kentucky (years)</td>
<td>44 ± 19</td>
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<tr>
<td>Body mass index (kg/m²)</td>
<td>32.3 ± 7.5</td>
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<tr>
<td>Systolic BP (mm Hg)</td>
<td>128 ± 16</td>
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<tr>
<td>Diastolic BP (mm Hg)</td>
<td>79.1 ± 10</td>
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<tr>
<td>Triglycerides (mg/dL)</td>
<td>184 ± 108</td>
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<tr>
<td>Total cholesterol (mg/dL)</td>
<td>195.5 ± 99.9</td>
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<tr>
<td>HgA1C (%)</td>
<td>5.8 ± 1.1</td>
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- The majority of the participants were lifetime resident of Kentucky.
- Healthy Eating Index (HEI) comparisons between baseline and post-intervention is shown in Table 3.
  - HEI total score increased 8% from 63.3±11.6 to 68.5±11.4.
  - HEI scores for total fruit; whole fruit; total vegetable; legumes, orange and dark green vegetables; whole grain; and milk increased by 31%, 28%, 7%, 20%, 15%, and 3%, respectively, post intervention compared to the baseline.
  - Diet quality for saturated fat; and calories from solid fats, alcoholic beverages and added sugar also improved by 12% and 12%, respectively.

- Figures 1 through 6 depict results from CVD risk factor comparisons between baseline and post-intervention.
  - Total cholesterol, low-density lipoprotein cholesterol, triglycerides, systolic and diastolic blood pressure, and hemoglobin A1c levels significantly decreased post-intervention compared to pre-intervention.
  - Body Mass Index also significantly decreased post-intervention compared to pre-intervention (32.3 ± 7.5 kg/m² vs 32.0 ± 7.4 kg/m², respectively; p<.001).
  - High-density lipoprotein cholesterol levels did not change significantly (p=.105).

**CONCLUSIONS**

- The intervention was effective in improving diet quality and CVD risk reduction in adults living in a rural Appalachian Kentucky.
- The results provide evidence that an intensive behavioral counseling intervention outcome corresponds with U.S. Preventive Services Task Force Recommendation.
- Further research is needed to determine if the intensive self-management intervention leads to sustained improvements in eating habits and CVD risk factors.

**REFERENCES**