The Dietary Quality of Persons with Heart Failure in NHANES 1999-2006

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The Dietary Quality of Persons with Heart Failure in NHANES 1999-2006

Stephenie C. Lemon, PhD, Barbara Olendzki, MPH, RD, Robert Magner, MPH, Wenjun Li, PhD, Annie L. Culver, BPharm, Ira Ockene, MD, Robert J. Goldberg, PhD

OBJECTIVE

- To describe the dietary quality and achievement of recommended dietary goals and assess correlates of goal achievement in a national sample of persons with heart failure.

RATIONALE

- Heart failure is associated with considerable morbidity and mortality.
- U.S. American College of Cardiology/American Heart Association (ACC/AHA) guidelines recommend the following dietary guidelines for persons with non-end-stage heart failure:
  - Restricted sodium intake
  - Adherence to dietary guidelines for underlying and comorbid conditions, including coronary heart disease, hypertension, hypercholesterolemia and diabetes.
- However, there is little understanding of the current dietary quality of persons with heart failure.

METHODS

Data Source
- NHANES is a series of cross-sectional studies conducted by the CDC to provide health information representative of the civilian population.
- Uses multistage, stratified sampling design to ensure adequate population representation.

Target Population
- Adults 50 years and over.
- Self-reported ever being diagnosed with heart failure by a health care provider.
- Included 524 persons (6.5% of persons age 50+).

Dietary Assessments
- Single 24 hour recall administered at mobile exam center.
- Used Food Intake Analysis System (FIAS).

Goals defined using:
- ACC/AHA heart failure guidelines
- AHA dietary guidelines for CVD
- Dietary guidelines for Americans

Covariates
- Demographic factors: Age, gender, race/ethnicity, education income level
- Risk factors: Body mass index (BMI), smoking status.
- Medical conditions: Provider diagnosis of coronary heart disease, hypertension, hypercholesterolemia and diabetes, years since HF diagnosis

Statistical Analysis
- Weighted to general U.S. population age 50+ with heart failure.
- Descriptive statistics of population and dietary components.
- Principal component analysis using orthomax rotation to describe patterns of dietary goal adherence.
- Multivariate Poisson regression model to determine association of covariates with number of dietary goals achieved.

Dietary GOALS

<table>
<thead>
<tr>
<th>Dietary Component</th>
<th>Daily Goal</th>
<th>Mean (SE)</th>
<th>Met Goal</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>&lt; 2000 mg</td>
<td>2,716 (94)</td>
<td>34%</td>
<td>.63</td>
<td>-</td>
</tr>
<tr>
<td>Saturated fat</td>
<td>&lt; 7% total energy</td>
<td>11 (3)</td>
<td>13%</td>
<td>.65</td>
<td>-</td>
</tr>
<tr>
<td>Fiber</td>
<td>&gt;= 30 gm</td>
<td>14 (4)</td>
<td>4%</td>
<td>-</td>
<td>.79</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>&lt; 200 mg</td>
<td>262 (12)</td>
<td>53%</td>
<td>.65</td>
<td>-</td>
</tr>
<tr>
<td>Protein</td>
<td>0.8 gm/kg ideal body weight</td>
<td>1.1 (0.03)</td>
<td>68%</td>
<td>-</td>
<td>.77</td>
</tr>
<tr>
<td>Calcium</td>
<td>&gt;= 1200 mg</td>
<td>706 (21)</td>
<td>13%</td>
<td>-</td>
<td>.42</td>
</tr>
<tr>
<td>Magnesium</td>
<td>&gt;= 420 mg men</td>
<td>170 (9)</td>
<td>10%</td>
<td>-</td>
<td>.84</td>
</tr>
<tr>
<td>Magnesium</td>
<td>&gt;= 320 mg women</td>
<td>200 (7)</td>
<td>10%</td>
<td>-</td>
<td>.84</td>
</tr>
</tbody>
</table>

MULTIVARIATE POISSON MODEL PREDICTING NUMBER OF GOALS MET

<table>
<thead>
<tr>
<th>Covariate</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>&lt; HS degree</td>
<td>Referent</td>
</tr>
<tr>
<td>HS degree</td>
<td>1.19 (1.05-1.35)</td>
</tr>
<tr>
<td>&gt; HS degree</td>
<td>1.16 (1.02-1.32)</td>
</tr>
<tr>
<td>BMI (per unit)</td>
<td>.990 (.982-.997)</td>
</tr>
<tr>
<td>Current smoker</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Referent</td>
</tr>
<tr>
<td>Yes</td>
<td>.90 (.79-1.00)</td>
</tr>
</tbody>
</table>

IMPLICATIONS AND LIMITATIONS

- Study limitations include self-reported heart failure diagnosis and diet and cross-sectional design.
- Dietary quality of persons with heart failure is poor, with persons of lower education, overweight and obese persons and smokers at greatest risk.
- Poor diet places persons with heart failure at risk for greater symptoms, poorer quality of life, worsening comorbidities and greater mortality rates.
- Behavioral scientists and clinicians are challenged to develop appropriate dietary interventions targeted for this population.