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Do U.S. adults living in food insecure households experience poorer cardiovascular health?

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Keywords
food security, food insecurity, cardiovascular health, gender differences

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**Background**

- Food insecurity impacts 15.6 million U.S. households.
- Relationships between food insecurity and individual cardiovascular disease (CVD) risk factors range from well-established to inconsistent and understudied:
  - Positive associations with poor glycemic control, tobacco use, and poor diet.
  - Positive associations with unhealthy weight for women.
  - Inconsistent evidence on links with hypertension, dyslipidemia and limited research on physical activity.

**Objective** To quantify the extent to which food insecurity is associated with overall cardiovascular health in U.S. adults and to assess gender differences.

**Methods**

- Cross-sectional study design
- 1,446 National Health and Nutrition Examination Survey participants (2011-2012) met inclusion criteria (>20 years old, not pregnant, without CVD, and complete exposure, outcome and covariate data)

**Exposure**

- USDA Adult Food Security Module 10-item questionnaire
- Affirmative responses were summed and dichotomized as food secure (≤2) or food insecure (≥3)

**Outcome**

- American Heart Association’s Life’s Simple 7 metric components achieved were summed:

**Health Behaviors**

- Non-smoking*: Never smoker or quit > 12 months
- Physically active*: Meets federal guidelines (>150 min moderate; ≥75 min vigorous, or equivalent PA/week)
- Healthy weight*: Body mass index <25 kg/m²
- Healthy diet*: Meets 4-5 AHA dietary components

**Health Factors**

- Optimal plasma glucose*: <100 mg/dL
- Optimal total cholesterol*: <200 mg/dL
- Optimal blood pressure*: <120/80 mm Hg

**Analysis**

- Linear and logistic regressions to test associations between food insecurity and overall ideal cardiovascular health & individual components. Interaction between food insecurity and gender and ideal cardiovascular health was tested.

**Results**

- U.S. adults living in food insecure households compared to food secure households were younger (40.9 vs 47.4 years old) and a greater proportion were Non-Hispanic Black (15.9 vs 10.1%), Hispanic (22.0 vs 11.1%), had less than high school diploma (28.4 vs 11.5%), never married (29.2 vs 19.6%), and depressed (17.7 vs 5.1%) (p<0.05)
- 15.8% of U.S. adults live in food insecure households
- No U.S. adults met all ideal cardiovascular health components

**Strengths**

- Nationally representative sample
- USDA Food Security Module is valid and reliable
- Individual cardiovascular health components (i.e., anthropometrics & labs) may be less biased

**Limitations**

- Cross-sectional study design
- Measurement error may be present for self-reported indicators
- Potential for unmeasured confounding

**Public Health Implications** A better understanding of the relationship between food insecurity and tobacco use is needed to inform effective interventions and policies.