PANEL: Food Insecurity and Health-related Outcomes

David H. Holben, PhD, RD, LD
Professor
Director, Didactic Program in Dietetics
Ohio University, Athens, Ohio
My Background

Child of Appalachia (Western PA)
Registered Dietitian
Educator
• School of Applied Health Sciences and Wellness
Appalachia, U.S.
Objective

• To identify health-related outcome variables measured in food security-related research.
  – Functional health and well-being
Consequences of Food Insecurity

- Physical Impairments related to insufficient food
- Psychological issues due to lack of access to food
- Sociofamilial disturbances
Food insecurity...

...is barrier to positive health and nutrition outcomes.

Sources: Holben, 2010; Holben, 2012
Health Status

• Appalachian Ohio Pilot Study
  – To examine the relationship between household food security status and measures of functional health status.
  – Participants: 1,006 adults
    • Clinic setting (n=605)
    • Community setting (n=401)
  – Outcomes
    • Household food security (USDA measure)
    • Functional health and well-being (SF-36)

Funding: Ohio University. Pheley et al., 2002.
Health Status

• Appalachian Ohio Pilot Study
  – Functional health and well-being (SF-36)
• Medical Outcome Study Short Form-36 (SF-36)
  – Survey (from Medical Outcomes Study, 1992)
  – 36 items representing an 8-scale profile (0-100 score)
    » Physical functioning
    » Role limitations because of physical health problems
    » Bodily pain
    » General health
    » Vitality
    » Social functioning
    » Role limitations because of emotional problems
    » Mental health

Pheley et al., 2002; Stewart & Ware, 1992; Ware et al., 1993.
Health Status

- Appalachian Ohio Pilot Study
  - Individuals living in food insecure households in a rural Appalachian Ohio community.
  - Poorer health status (physical health, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, mental health, and role limitations due to physical problems) (p<.05).
  - Food insecurity was associated with poor health, even at minimal levels (p<.05).

Pheley et al., 2002.
Health Status

- Perceived Health Status
  - Validated measure of functional health status
  - One-item on general health
Chronic Disease Risk

• [Follow-up] Appalachian Ohio Study
  – To assess the relationship between household food security status and clinical measurements of several chronic health risks, including those that can contribute to obesity and diabetes.
  – Participants: 2,580 adults (community-based) (n=808, clinical health assessment)
  – Outcomes
    • Household food security (USDA measure)
    • Functional health and well-being (SF-36)
    • BMI, BP, Chol, Glu, HbA1c, Hgb

Chronic Disease Risk

• [Follow-up] Appalachian Ohio Study
  – Individuals living in food insecure households in a rural Appalachian Ohio community.
    • Clinical measures within recommended ranges and did not differ by food security status (BP, Chol, Glu, HbA1c, Hgb) \((p>.05)\)
    • BMI was greater among participants from food-insecure households, especially among women \((p=.04)\)

Chronic Disease Risk

• [Follow-up] Appalachian Ohio Study
  – Individuals living in food insecure households in a rural Appalachian Ohio community.
    • Those with HbA1c level > 7% (33.9%) were more likely to come from food-insecure households than respondents with HbA1c < 7% (22.5%) ($P = .053$).
    • Of the 2,504 who noted their diabetes status, 298 (11.9%) reported having diabetes.
      – People who reported having diabetes were significantly more likely to live in food-insecure households (37.9%) than in food-secure households (25.8%) ($P < .001$).

Chronic Disease Risk

• Health Outcomes
  – Random vs. Fasting
  – CLIA-approved equipment
Obesity and Metabolic Syndrome

• US Children (12-18y) Study
  – To assess differences in adolescent obesity and metabolic syndrome by household food security using a nationally-representative cross-sectional survey.
  – Outcomes
    • Household food security (USDA measure)
    • BMI, Waist Circumference
    • LDL, BP, Glu, TG.

Obesity and Metabolic Syndrome

• US Children (12-18y) Study
  – No significant differences were existed in mean BMI-for-age percentiles by food security status ($p = 0.087$)
  – Adolescents from marginally food secure (MFS, 44%, Odds Ratio: 1.44 [1.12-1.87]) and low food secure (LFS, 44.0%, OR: 1.44 [1.13-1.84]) households were significantly more likely to present with a BMI >85th percentile than high food secure (HFS) households.

• US Children (12-18y) Study
  – Adolescents from HFS households had significantly lower mean central obesity than those from MFS and LFS households ($p < 0.001$).
  – MFS (52%, OR: 1.52 [1.08-2.15]), LFS (42.0%, OR: 1.42 [1.11-1.80]) and very-low food secure (VLFS, 51%, OR: 1.51 [1.10-2.08]) were significantly more likely to present with central adiposity than those from HFS households.

Obesity and Metabolic Syndrome

- US Children (12-18y) Study
  - Only those from HFS households had significantly higher HDL than children from LFS households ($p = 0.019$).
  - There were no significant differences in blood glucose, lipids, blood pressure or metabolic syndrome by food security category.

Obesity and Metabolic Syndrome

- Health Outcomes
  - Random vs. Fasting
  - CLIA-approved equipment
**Others to Consider...**

- **Social Capital**
  - A measure of trust, reciprocity, and social networks. Martin et al., 2004
  - 7-item measure. Sampson et al., 1997

- **Produce Intake and Behaviors**
  - Servings, Perceived benefit/self-efficacy/control, Perceived diet quality, Stages of change Continuum.
    
    Townsend & Kaiser, 2005; Townsend et al., 2003
Thanks!