



Question: What is the relationship between household food insecurity (HFI) and measures of body weight?

Table 1. Summary of studies examining the relationship between household food insecurity & weight outcomes in adults

Author, Year Study Design, Duration Risk of Bias Score: Data Source, Location	Race/ Ethnicity Sample Size Age, Gender Baseline weight status	Description Food Insecurity Measure	Results	Summary of Findings	Limitations
<p>Kim, 2007</p> <p>Prospective Cohort Study (PCS); 7y and 8y</p> <p>Risk of Bias Score: 4/24</p> <p>Health and Retirement Survey (HRS) and Asset and Health Dynamics Among the Oldest Old (AHEAD)</p> <p>USA</p>	<p>81.2% (HRS), 87.4% (AHEAD) White</p> <p>N=9,481 (HRS), 6,354 (AHEAD)</p> <p>60.8y (SD=4.2) [HRS]; 79.6y (SD=5.8) [AHEAD]</p> <p>47.7% (HRS) 59.9% (AHEAD) female</p> <p>Baseline mean BMI and prevalence of overweight HRS: 27.3 and 65.8 % AHEAD: 25.1 and 46.4%</p>	<p>Respondents were classified as food insecure (in past 2 years) based on responses to two modified questions on the US Household Food Security Survey Module</p>	<p>Previous food insecurity and BMI at follow-up: [HRS] NS; [AHEAD] NS</p> <p>Change in food insecurity level and change in BMI during follow-up: [HRS] NS; [AHEAD] $\beta=0.30$ (P=0.025)</p>	<p>Change in food insecurity was positively related to BMI in AHEAD, but not in HRS. Previous food insecurity was not significantly associated with BMI at follow-up in either cohort.</p>	<p>NEL BAT Limitations: self-reported height and weight; did not adjust for dietary intake, household composition, or affordability of foods available.</p> <p>Other limitations: Death rate was 13% in AHEAD, but was not associated with food insecurity; only two questions were used to assess food insecurity status, which authors state could have underestimated the exposure.</p>
<p>Laraia, 2010</p> <p>PCS; ~13wk</p>	<p>68.8% White and other 31.2% Black</p>	<p>Food insecurity definition used: Three levels of food</p>	<p>Food insecurity and weight gain during pregnancy (ref: food</p>	<p>Food insecurity was associated with greater weight gain during</p>	<p>NEL BAT Limitations: Self-reported pre-pregnancy weight; no measure of diet</p>



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<p>Risk of Bias Score: 4/24</p> <p>Pregnancy, Infection, and Nutrition (PIN) cohort</p> <p>USA</p>	<p>N=810</p> <p>27.3y (SD=5.5)</p> <p>100% female</p> <p>Prevalence of pregravid BMI:</p> <p>13% underweight 42% normal weight 12% overweight 17% obese 16% severely obese</p>	<p>insecurity created using the 18-item Core Food Security Module at 27-30 weeks' gestation:</p> <p>1) Food scarce (answered no to all 18 questions)</p> <p>2) Marginally food scarce (answered yes to 1 or 2 questions indicating that there was anxiety about sufficient quantity of food)</p> <p>3) Food insecure (answered yes to 3 or more questions indicating insufficient quantity and reduced quality and desirability of food).</p>	<p>secure):</p> <p>Marginally food secure</p> <p><i>Pregnancy weight gain: NS</i></p> <p><i>Adequacy of weight gain ratio: NS</i></p> <p>Food insecure</p> <p><i>Pregnancy weight gain: $\beta=1.87$ (95% CI=0.13-3.62)</i></p> <p><i>Adequacy of weight gain ratio: $\beta=0.25$ (95% CI=0.01-0.49)</i></p> <p>Food insecure</p> <p><i>Severe pregravid obesity: [adjusted odds ratio (AOR) 2.97, 95% confidence intervals (CI) 1.44, 6.14]</i></p>	<p>pregnancy and greater adequacy of weight gain ratio, while being marginally food secure was not. Living in a food insecure household: was significantly associated with severe pregravid obesity.</p>	<p>Other limitations: 337 women excluded due to missing information differed from included subjects (less education, less income, and more likely to be black, which are risk factors for food insecurity); small sample size: few women experienced food insecurity (10%, n=79); did not adjust for participation in nutrition assistance programs</p>



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<p>Olson, 2005 PCS; 2y Risk of Bias Score: 6/24 Bassett Mothers Health Project (BMHP) cohort study USA (Rural NY)</p>	<p>Non-Hispanic white (95.7%) Native American (2.1%) Asian (0.5%) African American (0.5%) Hispanic (0.2%) Others (1%) N=303 28.8y±5.4 100% female Population-based sample in early pregnancy: 25.7% overweight, 23.3% obese</p>	<p>Baseline food insecurity: measured by 3 items included in the woman’s medical record from the (IOM) Nutrition Questionnaire. Postpartum food insecurity measured using 3 questions from the US Household Food Security Survey that were included in a mailed questionnaire.</p>	<p>Food insecurity early in pregnancy and weight at 2y follow-up: <i>Risk of obesity: NS</i> <i>Risk of major weight gain: (≥4.55kg): NS</i> Became food secure and anthropometric outcomes at follow-up (3rd grade): <i>All groups, BMI, and weight: NS</i></p>	<p>Food insecurity in early pregnancy was not associated with increased risk of obesity or major weight gain at 2 years postpartum.</p>	<p>NEL BAT Limitations: race/ethnicity, physical-activity, use of food assistance, and energy-intake not controlled; Only baseline food insecurity used in analysis; large loss to follow-up may have biased results Other Limitations: Did not include family composition, participation in food assistance programs, availability and accessibility of food.</p>



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Whitaker, 2007 PCS; 2y Risk of Bias Score: 4/24 The Fragile Families and Child Wellbeing Study USA-urban population	White, non- Hispanic (19.6%) Black, non- Hispanic (54.0%) Hispanic (23.7%) Other races (2.8%) N=1,707 ≥18y 100% female Prevalence of obesity: 41% at baseline	Household Food Security Survey Module; food security was based on the 10 household- and adult- referenced questions in the module; validated scale; administered at baseline and 2y follow- up	Baseline food insecurity and odds of obesity or weight gain at follow-up (ref: food secure) <i>Marginally food secure: NS</i> <i>Food insecure: NS</i> <i>Change in food security and weight gain at follow-up: NS</i>	Food insecurity at baseline or changes in food security status over a 2-year interval were not significantly associated with changes in body weight over that period.	NEL BAT: Did not account for physical activity, age, energy intake, or participation in food assistance programs; height and/or weight were self-reported for some subjects Other Limitations: The study included only one-third of the original birth sample, those studied were more socioeconomically disadvantaged, selection bias possible; limited generalizability of sample; sample was too small to determine whether the relationship between changes in food security status and changes in weight differed by certain characteristics, such as income or baseline obesity status