

The Food Insecurity-Obesity Paradox in Women

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Introduction and Methods: This study examined the direction of the relationship between food insecurity and obesity and the mechanisms through which food insecurity might lead to obesity in a sample of 436 healthy, adult women from rural Upstate New York. The study had a prospective cohort design and women were followed from early pregnancy until two years postpartum. Data were collected through self-administered behavioral questionnaires and food frequencies and a medical record audit; height and weight measurements at all time points were measured by health care providers following standardized study protocols.

Results: Direction of the Relationship: Food insecurity at the beginning of pregnancy was positively associated with major weight retention at two years postpartum, but only in initially obese women ($p = 0.007$). Initial obesity was also associated with increased risk of becoming food insecure ($p < 0.05$). Cross-lagged panel analysis indicated the causal priority should be given to the latter pathway. Mechanisms: Measures of quantity of food intake, quality of the diet, eating pattern, and physical activity were examined as potential mediators. Consuming fewer than 3 fruits and vegetables per day and a more binge-like pattern of eating were associated with initial food insecurity and major weight retention at two years postpartum ($p < 0.05$). But these variables did not meet the final criterion for being a mediating variable, a reduction in the coefficient for food insecurity when they were added to the regression model.

Discussion: Direction of Relationship. Being obese in early pregnancy was associated with increased risk of becoming food insecure. The cross lagged panel analysis indicated that this causal direction was statistically significant when controlling for initial food insecurity and weight status, whereas, the other was not. This result provides support for what we have called “reverse causality.” Thus the previous findings from cross sectional studies of an association between food insecurity and obesity may be due to the fact that obese women are at increased risk of becoming food insecure across time.

The time in the life span of the women in this study seemed like an appropriate window for examining the association between food insecurity and obesity when this research was initiated. However recent findings from life course research showing socioeconomic disadvantage in early life (childhood) to be positively associated with increased risk of obesity in young adulthood indicates a need much longer follow-up studies that include exposure to food insecurity at critical periods in childhood.

Potential Mediators. Overall, no variables emerged as being obvious mediators of the relationship between initial food insecurity and major weight gain or change in food security status (particularly becoming food insecure) and major weight gain. The small sample sizes and the large variation on some of the variables may have contributed to the lack of significant findings related to the mediators. There are several other potential explanations for our findings. One is the possible timing of the measurement of the mediating variables. They were measured over a year after the initial food insecurity measurement was taken and this time period included a pregnancy. Additional data indicates that all women’s diets were similar during pregnancy no matter what their initial food insecurity status was. Seventy percent of food insecure women participated in the Supplemental Nutrition Program for Women, Infants, and Children (WIC) during pregnancy. The additional food from this program likely blunted any impact of food insecurity on eating during pregnancy and this effect may have carried over into the postpartum period, although the data clearly indicate that the initially food insecure women ate differently at one year postpartum than did food secure women. The dietary variables were measured a year before the weight measurement was taken and it may be that change in diet that related to weight change took place closer to two years postpartum.

Policy Implications: The women who were initially food insecure and were also obese formed a distinct subgroup that was especially vulnerable to weight gain. This is a group that merits targeting for special intervention in food assistance programs including WIC. Development and implementation of approaches to secondary prevention, in the context of the WIC Program that is generally more oriented toward primary prevention, will require careful consideration of the length of postpartum participation allowed, the composition of the WIC food package, and the focus and content of nutrition education. In this regard, it is very interesting to think about the meaning of the findings of recent studies by Jeffery and Wing. These investigators found that weight loss among overweight individuals was greater among those receiving food provisions than it was among those receiving standard behavioral therapy and those receiving money for achieving weight loss goals.

