

# Examining the Relationship between Food Insecurity and Obesity in the United States Using a Nationally Representative Sample

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## INTRODUCTION

Obesity in the United States is no secret with 42.4% of the population being obese in 2017-2018[1]. A lesser known health issue is food insecurity with 11.1% of the population facing food insecurity in 2018[2]. Very low food security is defined as multiple reports of disrupted eating patterns and reduced food intake that involved hunger. Low food security is when there are reports of reduced quality, variety, or desirability of diet with little to no reduced food intake. Marginal food insecurity is when there are one or two reported indications of anxiety over having enough food or encountering a shortage of food in the household [3]. Food insecurity and obesity both have related health issues. Food insecurity has been linked to birth defects, anemia, lower nutrient intakes, cognitive problems, aggression and anxiety, poorer general health, asthma, behavioral problems, depression, suicide ideation, worsened oral health, diabetes, hypertension, hyperlipidemia, and poor sleep[4]. Obesity has been linked to diseases and health conditions which are hypertension, type 2 diabetes, coronary heart disease, various cancers, all cause mortality, low quality of life, body pain, and difficulty functioning physically[5].

## METHODS

This study used 2013-2014 National Health and Nutrition examination Survey (NHANES) data, N=5,769. The main independent variable of interest was food insecurity and overweight or obesity was the main outcome of interest. Additional variables of interest were marital status, race, and sex. Control variables were age, income, and education level. IBM's SPSS version 25 was used to analyze the data. A descriptive analysis was used to analyze descriptive statistics of the data. Multinomial logistic regression was used to examine the likelihood of overweight/obesity weight status based on level of food security as well as marital status, race, and gender. A crosstabulation was conducted to compare food security status, sex, race, and marital status.

## RESULTS

Those who were low food secure (45.8%) or very low food secure (45%) were more likely to be obese. Examining obesity females (42%) were 1.2 [95% CI = 1.06, 1.4] times more likely when compared to males to be obese (33.1%). Examining race, when compared to non-Hispanic White individuals, non-Hispanic Black individuals (47.2%) were 1.5 times [95% CI = 1.26, 1.83] more likely to be obese. Likewise, Hispanic including Mexican American individuals (42.4%) were 1.5 times [95% CI = 1.27, 1.88] more likely to be obese. When compared to non-Hispanic White individuals, Other race individuals (18.3%) were 0.3 times [95% CI = 0.23, 0.36] less likely to be obese. Examining marital status revealed, those who were married were 1.2 times [95% CI = 1.06, 1.4] more likely to be obese (37.5%). Those who were not married were more likely to be very low food secure (10.4%), low food secure (13.8%), or marginally food secure (11.6%). Hispanic including Mexican American individuals (58.5%) and non-Hispanic Black (65.3%) individuals were less likely to be fully food secure than non-Hispanic White individuals (76.1%) and Other race individuals (83.2%). Males and females had similar occurrences of all levels of food security. Those who were obese (66.2%) were less likely to be food secure than those who were overweight (73.5%) or not overweight or obese (73.9%).

Table 1: Parameter Estimates and Odds Ratios

	Overweight			Obese		
	B	S.E.	OR(95%CI)	B	S.E.	OR(95%CI)
<b>Food Security</b>						
Very Low Food Security	0.04	0.15	1.04(0.77-1.40)	0.35	0.14	1.41 (1.08-1.85)*
Low Food Security	-0.03	0.13	0.98 (0.75-1.27)	0.3	0.3	1.36 (1.07-1.72)*
Marginal Food Security	0.14	0.13	1.14 (0.89-1.47)	0.15	0.15	1.17 (0.92-1.48)
Fully Food Secure						
<b>Race</b>						
Other	-0.67	0.1	0.51 (0.42-0.63)*	-1.26	0.12	0.28 (0.23-0.36)*
Hispanic including Mexican American	0.46	0.11	1.56 (1.29-1.95)*	0.43	0.1	1.54 (1.27-1.89)*
non-Hispanic Black	0.04	0.1	1.04 (0.85-1.28)*	0.42	0.1	1.52 (1.26-1.83)*
non-Hispanic White						
<b>Marital Status</b>						
Married	0.27	0.08	1.30 (1.12-1.52)*	0.35	0.08	1.41 (1.22-1.64)*
Not Married						
<b>Sex</b>						
Female	-0.4	0.07	0.67 (0.58-0.77)*	0.2	0.07	1.22 (1.06-1.34)*
Male						

Note: B= Parameter Estimate, S.E.= Standard Error, OR= Odds Ratio 95%, CI= 95% Confidence Interval, \*= p≤ .05

## CONCLUSIONS

This study supports what previous studies found [6] [7] and expands on the information pertaining to marital status and sex. Future studies should examine food consumption in relation to food insecurity and weight status. This can help further the information for public health professionals to use in order to reduce obesity and improves food insecurity.

## REFERENCES

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