

# What is food insecurity

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Food insecurity is defined as “ a household-level economic and social condition of limited or uncertain access to adequate food” by the US Department of Agriculture (USDA).

The economic burden of the community can be increased by food insecurity because it can lead to serious health outcomes which are most of the time underestimated. Approximately 12.3% of the U. S household population were considered food insecure in the year 2016. 2 Because of the lack of food availability they had to face difficulty in contributing food to their family.

The low and very low food secure population which was 4.9% in the year 2016 is the most concerning category among the food insecure individuals. The adverse health outcomes such as cardiovascular disease, hypertension, obesity, and prediabetes are associated with food insecurity because they tend to eat less nutritious food and tend to eat more food rich in carbohydrates, calorie or sweetened beverages because they are available for a lesser cost which can increase resistance to insulin.

It is important to look at the association between food insecurity and prediabetes because there is an increased possibility of this condition progressing to Type 2 Diabetes Mellitus (T2DM). Very limited or fewer studies have been carried out on the association between food insecurity and prediabetes. Hence, my goal was to look at the association between food insecurity and prediabetes among the diverse racial/ethnic groups.

Approximately 84 million (33.9%) adults had prediabetes in the year 2015. 6, 7 out of which 90% are unaware of this condition and every 1 out of 3 American adults have prediabetes. Prediabetes is a condition in which there

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is increased blood glucose. But if the individual has prediabetes the cells do not respond to insulin a hormone which helps the cells to absorb the blood glucose and consequently, there is increased the blood glucose level in the circulation which can lead to the condition.

By providing proper intervention methods we can slow the progression prediabetes to T2DM if we can diagnose prediabetes at an early stage among the vulnerable population; which will reduce the disease burden, mortality and cost of healthcare-associated with the disease. 8 Most of the studies measured food insecurity based on the USDA 18-item or the 10-item survey tool and categorized food insecurity into “ fully food secure”, “ marginal food secure”, “ low food secure” and “ very low food secure”. Individuals who were categorized under “ very low food security” hunger factor was taken into account in this category.

The outcome prediabetes was measured mostly based on as a self-reported measure. 8-10 The prevalence of prediabetes in this study by Lee, A. M was 29. 64% in the year 2018. 4 When prediabetes was compared to no diabetes the odds ratio was increased by 1. 39 (95%CI 1. 21-1. 59) among the food insecure population.

Looking at the statistical significance of the association between food insecurity and prediabetes among women, there were increased odds of prediabetes among the obese women 2. 93 (95% CI: 1. 91-4. 49)when compared to normal-weight women. 5 And increased odds of prediabetes among overweight women 1. 57 (95% CI: 0. 87-2. 84) when compared to normal-weight women. 5 Stratified by race/ethnicity the association wasn't

significant among males. 10 Non-Hipic white women 1. 53 (95% CI: 1. 04-2. 53) and Non-Hipic black women 2. 30 (95% CI: 1. 44-3. 66) had increased odds ratio when compared to the Hipics.

One of the limitations was no availability of data on physical exercise, but since California HealthInterviewSurvey (CHIS) has the data on physical activity I would like to consider it to be a risk factor in the association along with information on Supplemental Nutrition Assistance Program (SNAP) and food stamp benefit. Because individuals who benefit from the food stamp or SNAP tend to consume food rich in carbohydrate and less rich in protein which can influence insulin resistance and give us an insight on their lifestyle changes and health effects.

Also one other limitation in the study conducted by Lee, A. M et al., as they were not able to stratify the Food insecurity on multiple stages. 4 So, I would like to use the stratified data on levels of food insecurity with hunger and food insecurity without hunger available in CHIS categorized using the U. S. Household Food Security Survey Module (HFSS): Six-Item tool by the USDA. The concept analysis that I would like to use for the theoretical model based on the association between food insecurity and prediabetes is that how these different behavioral pathways lead to food insecurity and how by biological mechanism it leads to prediabetes.