

## **Food desert and diabetes mortality and morbidity: Evidence from Fulton County GA**

**Background:** Diabetes is one of the leading causes of death and disability among chronic diseases in the United States. Type 2 diabetes, which accounts for 90-95% of all diabetes cases, is a preventable form of disease which can be controlled through diet and physical activity. But residents of places such as ‘food deserts’, with no access to fresh food, often bear the burden of chronic diseases such as diabetes. There have been very few studies which have particularly looked at the association between food environment and diabetes prevalence in such deprived areas.

**Objective:** The study investigated the association between living in food desert and developing diabetes or dying from the disease. It considered factors such as access to grocery stores and supermarkets, convenience stores, food joints and owning a personal vehicle that might affect diabetes related morbidity and mortality. It has also looked at factors such as income and race which might influence the association.

**Methodology:** The study emphasizes on the lack of access to food, in low income and deprived neighborhoods and its impact on diabetes mortality and morbidity at the micro level of census tracts in Fulton County, Georgia. Diabetes related data was obtained from OASIS and Fulton County Department of Health and Wellness for the years 1994-2010 for 204 census tracts of Fulton County. Data for food desert distribution was extracted from the ‘Food desert Locator’ tool of the United States Department of Agriculture (USDA). Data on food stores was obtained through ReferenceUSA. Demographic information was acquired from American Fact Finder of the US Census Bureau. SPSS version 21 was used to calculate Pearson’s correlation to find the association between food environment and diabetes as well as to see whether there is an association between income and vehicle ownership with diabetes occurrence. ArcGIS 10.1 was used to represent data as maps showing the geographical distribution of various factors across the County and their association with the occurrence of diabetes.

**Results:** The low income African American dominated census tracts which have been designated as food deserts have a higher occurrence of morbidity and mortality from diabetes. The correlation between number of supermarkets and grocery stores, convenience stores and full service restaurants has no statistically significant relation with diabetes. Similarly, there is no statistically significant relation between car ownership and diabetes. But the relationship between income and diabetes has a statistical significance.

**Conclusion:** This study did not find any significant statistical association between diabetes and living in food desert. But from the GIS maps it can be observed that the number of food markets (supermarkets and grocery stores) are much less in the low income tracts than elsewhere and these are also the tracts which have higher occurrence of diabetes. Similarly, the numbers of convenience stores, which usually do not have a healthy collection of food, are more in the low income neighborhoods. The weak association between the factors studied might be because other factors such as education and access to healthcare have not been considered for this study. More research in this field is required to get a better picture of the diabetes health status in food desert areas.