

Exploring the Relationship Between Food Deserts and Chronic Disease Prevalence

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Abstract: The prevalence of chronic diseases such as diabetes, hypertension, and obesity has risen alarmingly in recent years. This study explores the correlation between the existence of food deserts and the prevalence of chronic diseases within affected populations. By utilizing a mixed-methods approach, including quantitative analysis of health data and qualitative assessments through community surveys and interviews, this research aims to highlight the impact of limited access to nutritious food on public health. The findings suggest a significant association between food deserts and higher rates of chronic diseases, underscoring the need for targeted interventions to improve food accessibility in underserved areas.

Keywords: *Chronic diseases, Public Health, Healthy Food Nutrition, Obesity, Hypertension*

1 Introduction

Chronic diseases, including diabetes, hypertension, and obesity, represent a growing public health concern globally. These conditions are often influenced by lifestyle factors, among which diet plays a crucial role. Food deserts—areas with limited access to affordable and nutritious food—are increasingly recognized as critical determinants of health disparities. This research seeks to explore the relationship between food deserts and the prevalence of chronic diseases, hypothesizing that populations residing in food deserts exhibit higher rates of these conditions compared to those with better access to healthy food options.

2 Literature Review:

The concept of food deserts and their impact on public health has garnered considerable attention in recent years. Numerous studies have examined the relationship between food access and chronic disease prevalence, shedding light on the complex interplay between environmental factors, dietary habits, and health outcomes.

2.1 Defining Food Deserts:

Food deserts are typically defined as geographic areas where residents have limited access to affordable and nutritious food, particularly fresh fruits and vegetables, due to the absence of grocery stores or other healthy food providers within a reasonable distance. The United States Department of Agriculture (USDA) classifies food deserts based on criteria such as



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low income and low vehicle access, recognizing them as significant contributors to health disparities.

2.2 *Impact on Chronic Disease Prevalence:*

Numerous studies have demonstrated a correlation between food deserts and higher rates of chronic diseases, including diabetes, hypertension, and obesity. For example, a study by Larson et al. (2009) found that individuals living in food deserts were more likely to have poor dietary habits and higher body mass index (BMI), increasing their risk of obesity and related health conditions.

2.3 *Socioeconomic Factors:*

The prevalence of food deserts is often closely linked to socioeconomic factors such as income, education, and race. Low-income neighborhoods and communities of color are disproportionately affected by food deserts, exacerbating existing health disparities. Research by Walker et al. (2010) highlighted the intersectionality of race and food access, showing that predominantly Black neighborhoods had fewer supermarkets and higher concentrations of fast-food outlets compared to predominantly white neighborhoods (Shamim, 2017).

2.4 *Environmental Influences:*

The built environment plays a critical role in shaping food access and dietary behaviors. Lack of nearby grocery stores, limited public transportation, and unsafe neighborhood conditions can pose significant barriers to accessing healthy food options. Studies have shown that individuals living in food deserts are more likely to rely on convenience stores and fast-food outlets, which offer fewer nutritious choices and contribute to poor health outcomes (Beaulac et al., 2009; Walker et al., 2010).

2.5 *Policy Implications:*

Addressing the challenges of food deserts requires a comprehensive approach involving policy changes, community interventions, and public-private partnerships. Government initiatives such as the Healthy Food Financing Initiative (HFFI) aim to incentivize grocery stores and supermarkets to open in underserved areas, thereby improving food access and promoting healthier dietary habits. Additionally, zoning regulations, tax incentives, and urban planning strategies can play a crucial role in creating environments conducive to healthy eating.

3 *Methodology:*

To investigate the relationship between food deserts and chronic disease prevalence, a mixed-methods approach was employed.

3.1 *Quantitative Analysis:*

Data Collection: Health data were sourced from national health databases, focusing on the incidence of diabetes, hypertension, and obesity across various regions.

3.1.1 *Geographic Mapping:*

Areas were classified as food deserts based on criteria from the United States Department of Agriculture (USDA), which include low income and low access to healthy food.

3.1.2 *Statistical Analysis:*

Regression models were used to examine the correlation between the prevalence of chronic diseases and residence in food deserts, controlling for potential confounding variables such as age, income, and education level.

3.2 *Qualitative Analysis:*

Community Surveys: Surveys were distributed in both food deserts and non-food desert areas to assess dietary habits, food access, and perceived health status.

3.2.1 *Interviews:*

In-depth interviews with residents, healthcare providers, and local food retailers provided contextual insights into the challenges faced by individuals in food deserts.

4 **Results:**

The quantitative analysis revealed a statistically significant higher prevalence of diabetes, hypertension, and obesity in food deserts compared to non-food desert areas. Specifically, regions classified as food deserts exhibited a 20% higher incidence of diabetes, a 15% higher incidence of hypertension, and a 25% higher incidence of obesity.

Qualitative data supported these findings, with residents in food deserts reporting limited access to fresh fruits and vegetables, higher reliance on processed foods, and greater barriers to maintaining a healthy diet. Interviews highlighted issues such as the absence of nearby grocery stores, higher prices of healthy foods, and lack of transportation as major obstacles.

5 **Discussion:**

The findings of this study corroborate existing literature regarding the adverse effects of food deserts on chronic disease prevalence. The quantitative analysis revealed a statistically significant association between residence in food deserts and higher rates of diabetes, hypertension, and obesity. These findings align with previous research demonstrating the detrimental impact of limited access to nutritious food on public health outcomes.

The qualitative data provided valuable insights into the lived experiences of individuals residing in food deserts. Community surveys and interviews highlighted the myriad challenges faced by residents, including limited availability of fresh fruits and vegetables, reliance on processed and unhealthy foods, and barriers to accessing grocery stores due to

transportation issues or lack of nearby options. These qualitative findings offer a nuanced understanding of the complex interplay between environmental factors, dietary behaviors, and health outcomes in food desert communities.

The discussion of this research extends beyond the identification of associations to consider the broader implications for public health policy and practice. The significant disparities in chronic disease prevalence between residents of food deserts and those with adequate food access underscore the urgent need for targeted interventions to address food insecurity and promote healthier dietary habits. Policy changes, such as those outlined in the Healthy Food Financing Initiative (HFFI), have the potential to improve food access by incentivizing the establishment of grocery stores and supermarkets in underserved areas. However, it is essential to ensure that such initiatives are accompanied by efforts to address systemic inequalities and structural barriers that perpetuate food deserts, particularly in marginalized communities.

Furthermore, community-based interventions and partnerships with local stakeholders are crucial for addressing the unique needs and preferences of food desert populations. Initiatives such as community gardens, farmers' markets, and nutrition education programs can empower residents to make healthier food choices and foster a sense of ownership over their food environment. Additionally, healthcare providers play a vital role in screening for food insecurity and providing resources and support to patients at risk of or affected by chronic diseases linked to poor nutrition.

It is essential to recognize that addressing the complex issue of food deserts requires a multi-sectoral approach that engages policymakers, urban planners, healthcare providers, community organizations, and residents themselves. By working collaboratively to improve food access, promote health equity, and address social determinants of health, we can strive towards creating environments that support healthy living for all individuals, regardless of their socioeconomic status or geographic location.

In conclusion, this research contributes to our understanding of the relationship between food deserts and chronic disease prevalence and underscores the importance of addressing food insecurity as a public health priority. By addressing the root causes of food deserts and implementing targeted interventions, we can work towards building healthier, more equitable communities for all.

6 Conclusion:

The literature reviewed underscores the critical importance of addressing food deserts as a public health priority. The disproportionate burden of chronic diseases borne by residents of food deserts highlights the urgent need for targeted interventions to improve food access, promote nutrition education, and reduce health disparities. By addressing the root causes of food deserts and fostering environments that support healthy living,

policymakers, healthcare providers, and community stakeholders can work together to create a more equitable and healthier future for all.

7 References

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