



Disparities and access to healthy food in the United States: A review of food deserts literature

Renee E. Walker^{a,b,*}, Christopher R. Keane^a, Jessica G. Burke^a

^a Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate School of Public Health, 130 DeSoto Street, Pittsburgh, PA 15261, USA

^b Department of Society, Human Development, and Health Harvard School of Public Health, 401 Park Drive 4th Floor West, Boston, MA 02215, USA

ARTICLE INFO

Article history:

Received 12 October 2009

Received in revised form

17 April 2010

Accepted 21 April 2010

Keywords:

Food desert

Food access

United States

Socioeconomic status

Race/ethnicity

ABSTRACT

Increasingly, studies are focusing on the role the local food environment plays in residents' ability to purchase affordable, healthy and nutritious foods. In a food desert, an area devoid of a supermarket, access to healthy food is limited. We conducted a systematic review of studies that focused on food access and food desert research in the United States. The 31 studies identified utilized 9 measures to assess food access. Results from these studies can be summarized primarily into four major statements. Findings from other countries offer insight into ways, in which future research, policy development and program implementation in the U.S. may continue to be explored.

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1. Background

Environmental conditions have been extensively explored as contributing factors in promoting health disparities (Lee, 2002; Sexton, 2000). It is widely accepted that racial/ethnic minority neighborhoods are disproportionately affected by increased rates of morbidity, mortality and adverse health outcomes (Cubbin et al., 2001; Deaton and Lubotsky, 2003). These disparities are believed to be associated with factors, including residential segregation, poverty and neighborhood deprivation (Gee and Payne-Sturges, 2004), which can lead to adverse health outcomes. Previous studies focused on the ill-effects of neighborhood deprivation have reported the tendency of poor and minority neighborhoods to have an increased exposure to unhealthy advertisements for tobacco and alcohol (Morello-Frosch et al., 2002), fewer pharmacies with fewer medications (Morrison et al., 2000), and fewer supermarkets which offer a larger variety of affordable and healthy foods compared to smaller convenience stores (Morland et al., 2002b). The latter is of importance due to the emergence of "food deserts" in many low-income and minority neighborhoods that result from the absence of a supermarket.

The phrase "food desert" was first used in the early 1990s in Scotland by a resident of a public housing sector scheme (Cummins and Macintyre, 2002). Since that time, the phrase has been used

differently by different researchers. For example, in a study by Hendrickson et al. (2006) food deserts were defined as "urban areas with 10 or fewer stores and no stores with more than 20 employees" (2006: 372). Cummins and Macintyre (2002) define food deserts as "poor urban areas, where residents cannot buy affordable, healthy food" (Cummins and Macintyre, 2002). The latter definition focuses on the type and quality of foods rather than the number, type and size of food stores available to residents. Beyond these descriptions, there is a lack of consensus on the definition of food deserts (Hendrickson et al., 2006), and what measures are required for identifying food deserts, thereby contributing to the debate about their actual existence (Cummins and Macintyre, 2002; Cummins, 2003; Reisig and Hobbiss, 2000; Shaw, 2006).

In the U.S., several theories to how food deserts formed have been postulated. One theory has been associated with both the development and closure of stores (Curtis and McClellan, 1995; Guy et al., 2004). It is believed that the growth of large chain supermarkets on the outskirts of inner-cities in more affluent areas offer consumers a better quality, variety and price for food options. Additionally, these venues tend to have longer business hours and better parking options that are attractive to consumers (Alwitt and Donley, 1997; Guy et al., 2004). The expansion of these supermarkets have forced the smaller, independent, neighborhood grocery stores to close, thereby creating areas where affordable, varied food is accessible to those who have access to a car, or those able to pay public transportation costs (Guy et al., 2004). This theory has led one independent retailer to define a food desert as 'an area where high competition from the multiples [large chain supermarkets] has created a void' (Furey et al., 2001).

* Corresponding author at. Department of Society, Human Development, and Health Harvard School of Public Health, 401 Park Drive 4th Floor West, Boston, MA 02215, USA, Tel.: +1 617 384 8918; fax: +1 617 384 8730.

E-mail address: rwalker@hsph.harvard.edu (R.E. Walker).

Another theory of how food deserts formed in the inner-cities pertain to changes in demographics in larger U.S. cities between 1970 and 1988. It is speculated that during this period, economic segregation became more prominent with more affluent households emigrating from inner-cities to suburban areas (Bianchi et al., 1982; Nyden et al., 1998; Wienk et al., 1979). This shift caused the median income in the inner-cities to decrease and forced nearly one-half of the supermarkets in the three largest U.S. cities to close (Alwitt and Donley, 1997; Diesenhouse, 1993; Miller, 1994).

Other factors that make the establishment of businesses in inner-cities less desirable are inaccurate perceptions of these areas, declining demand for low-skilled workers, low-wage competition from international markets and zoning laws (Gittel and Thompson, 1999). For instance, in urban areas, it is difficult for large supermarkets to find land that is appropriate for the size of the supermarket, due to fragmentation of property that results from the ease of selling smaller pieces of land (Alwitt and Donley, 1997). It is plausible that urban food deserts would have a competitive advantage as sites for a supermarket, due to its prime location near the city center, ability to address an unmet demand and access to a large labor force. However, financial gain is often an underlying factor that tends to override these characteristics and deter retailers from establishing in the urban areas (Gittel and Thompson, 1999).

A consequence of poor supermarket access is that residents have increased exposure to energy-dense food (“empty calorie” food) readily available at convenience stores and fast-food restaurants (Drewnowski and Specter, 2004). It is documented that a diet filled with processed foods, frequently containing high contents of fat, sugar and sodium, often leading to poorer health outcomes compared to a diet high in complex carbohydrates and fiber (Block et al., 2004; Mari Gallagher Research & Consulting Group, 2006; Lewis et al., 2005; Swinburn et al., 2004). For those who are low-income, maintaining a healthy diet can be difficult to achieve due to various factors (Chung and Myers, 1999; Freedman, 1991; Hendrickson et al., 2006). First, the lack of financial resources present a barrier to healthy eating, due to the increased cost associated with healthy eating. Second, many urban areas lack a supermarket, thereby, limiting access to healthy foods for residents. For residents without access to a personal vehicle for transport to food stores outside the immediate neighborhood, residing in a food desert can be even more deleterious (Kirkup et al., 2004; Lake and Townshend, 2006).

People tend to make food choices based on the food outlets that are available in their immediate neighborhood (Furey et al., 2001). This can pose problems since many low-income, urban areas have a higher density of fast-food restaurants and corner stores that offer prepared foods compared to higher income areas (Hendrickson et al., 2006). Increasingly, environmental factors including where people live have been considered when studying food access (Rose and Richards, 2004). The impact of focusing on the neighborhood food environment is two-fold. First, increased attention is brought to the local food environment given the important role these environments play in providing food for residents within their immediate vicinities. Second, the uneven distribution of food stores can be observed and disadvantaged neighborhoods that lack supermarket access, or food deserts, can be noted.

The goal of this paper is to explore the current state of research on food deserts in the United States and to identify areas in need of future research. To date, there is a relatively limited amount of research on food deserts conducted in the U.S. One explanation for this finding is that food security, a household measure of hunger, is assessed in the U.S. annually, and forms the basis of numerous research studies. However, research on food deserts and food-related policy in the United States has become an increasing

priority for the United States Department of Agriculture (USDA). The Food, Conservation, and Energy Act of 2008, implemented by the USDA, provides legislation for Federal agriculture programs (The Food, Conservation, and Energy Act of 2008, The United States Department of Agriculture, June 18, 2008). Enacted into law in June 2008, this bill will remain in effect until 2013. In addition to international provisions outlined in the bill, the importance of addressing domestic food distribution and nutrition is highlighted. Section 7527 of the bill (2008: 389) outlines the responsibilities of the Secretary as they pertain to addressing food deserts in the U.S. These activities include researching the prevalence and causes of food deserts; effects of food deserts on populations; recommendations for reducing and eliminating food deserts; community development initiatives; incentives for food stores to establish in food deserts; and partnerships to address food deserts (The Food, Conservation, and Energy Act of 2008, The United States Department of Agriculture, June 18, 2008).

Restricting this review to studies conducted in the U.S. will parallel the USDA's efforts in researching food deserts in the U.S., and will bring attention to research looking at neighborhood-level access to food in a specific geographic region that is poorly studied and poorly understood. This paper will identify measures that have traditionally been used to assess food access in the U.S. and summarize the articles into major statements, or major research findings. Gaps in the literature will be identified. Lastly, the breadth of knowledge that exists within other countries will be discussed to offer insight into work that has been done pertaining to food deserts and food access within an international context.

2. Methods

The articles included in this review were identified from January 2008 to January 2010 by two mechanisms: keyword searches in the PubMed, Agricola, Anthropology, Environmental Studies, Geography, Public Affairs, and Sociology databases, and by reviewing the references of the articles identified from these databases. Combinations of the keywords “food desert” and “food access” were used to identify relevant articles. Only articles written in English were included in the review. No constraints were made for the year of article publication. The rationale for not limiting the year of article publication is due to the relatively recent nature of the topic. Abstracts were then reviewed to ensure that articles that did not meet certain criteria were excluded from the review. Abstracts excluded were: (1) editorials, (2) non-empirical papers, including review articles and book reviews, (3) articles with outcomes that did not focus on food deserts, and (4) letters to the editor. Fifty-two abstracts were identified in the initial review. After reading the articles, it was determined that only 31 would be included in the review after 5 were excluded based on the first exclusion criterion, 10 for the second criterion, 5 for the third criterion and 1 excluded for the fourth criterion. The articles were read with particular attention to the measures used in the studies. These measures were noted and designated as categories.

3. Results

The 31 selected articles represent a variety of work that has been done in the U.S. related to food access. Nine measures have been used to assess food access. For example, articles that used business directories/lists include yellow pages, business addresses on food stores, food store data including consumer spending, geographic location and store openings and closings. The food use

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