



Implications of fast food restaurant concentration for preschool-aged childhood obesity[☆]



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ARTICLE INFO

Article history:

Received 7 January 2013

Received in revised form 8 October 2013

Accepted 9 October 2013

Available online 26 October 2013

Keywords:

Obesity
Social marketing
Fast food
Children
Nutrition
Public health

ABSTRACT

In this research, the authors examine the effects on preschool-aged childhood obesity rates associated with the direct and moderating influence of fast food restaurant density levels, consumer poverty, and urbanization. Results show that higher levels of fast food restaurant saturation are associated with increased levels of childhood obesity in both urban and poor areas, with the largest negative effect of fast food availability on obesity occurring in more economically disadvantaged, urban areas. Findings highlight why the societal impacts of targeting vulnerable populations through corporate location selection strategies should be fully considered in social marketing initiatives, especially given that unhealthy products with long term health risks are increasingly accessible.

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1. Introduction

The increasing tendency to eat food prepared outside the home, especially fast food, has been one of the most significant changes in food consumption over the past 50 years (Binkley, 2006). Food purchases outside the home now account for nearly 50% of Americans' total yearly food expenditures (Economic Research Service/United States Department of Agriculture (ERS/USDA), 2009; National Restaurant Association (NRA), 2012). In addition, almost one out of every three children eats fast food on a daily basis, a rate that has increased more than fivefold since 1970 (Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004). Considering the fact that childhood obesity has more than tripled over the past generation, a better understanding of the potential effects of these long-term trends on children's health and welfare is needed (Centers for Disease Control and Prevention [CDC], 2012). Children now develop adult disorders, such as hypertension and type 2 diabetes, rarely observed in prior generations (Goran, Ball, & Cruz, 2003). Further, obese children and teens face a high likelihood of becoming obese adults (CDC, 2012). The childhood obesity epidemic has both immediate and long-term detrimental effects on the health and well-being of millions of

Americans (Elbel, Gyamfi, & Kersh, 2011; Grier, Mensinger, Huang, Kumanyika, & Stettler, 2007).

The prevalence of both childhood and adult obesity rapidly increased over the same time period that the number of fast food restaurants more than doubled (e.g., Nielsen, Siega-Riz, & Popkin, 2002). Very young children living in lower income, urban communities where access to healthy food options may be more limited (CDC, 2012) are especially at risk. Today, 14% of lower-income, preschool-aged children are obese, and one-third are considered either overweight or obese (CDC, 2012). Consequently, many in the marketing and consumer health communities are concerned about the relationship between fast food consumption and childhood obesity. Prior research has examined the impact of fast food bundling (Sharpe & Staelin, 2010), pricing (Khan, Powell, & Wada, 2012), and advertising (Hudson, Hudson, & Peloza, 2008) on children's health and welfare. However, the implications associated with restaurant location decisions, a subtler component of the strategic marketing process, have largely been ignored. While prior literature suggests that greater fast food consumption is indeed related to greater weight gain and obesity (Niemeier, Raynor, Lloyd-Richardson, Rogers, & Wing, 2006; Pereira et al., 2005), studies examining the specific relationship between fast food availability and obesity show mixed results. Further, information regarding how a high concentration of fast food outlets may negatively affect young children's health is extremely limited (Fleischacker, Evenson, Rodriguez, & Ammerman, 2011).

As questions regarding the social impact of fast food marketing tactics continue to mount (Center for Science in the Public Interest

[☆] The authors would like to thank the editor, the associate editors, and anonymous *JBR* reviewers for their constructive feedback throughout the review process.

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(CSPI, 2008; Food Research and Action Center, 2012), research is needed to provide greater insight into the relationship between fast food accessibility and the development of early childhood obesity. More specifically, a better understanding of how environmental factors may influence childhood obesity is necessary to develop more effective interventions to reduce the problem (Salois, 2012; Sturm & Cohen, 2009). Preschool aged children, whose obesity rates across the U.S. range from 10 to 15% or higher (CDC, 2012), represent a particularly vulnerable consumer group and serve as the focus of the present study (CDC, 2012; CSPI, 2008). Thus, the current research considers fast food accessibility as an element of the built environment and examines how two specific environmental factors, poverty and urbanization levels, may moderate the relationship between fast food accessibility and preschool childhood obesity rates. Based on the findings, several public policy and social marketing initiatives are proposed that may help communities better address the problem of early childhood obesity.

2. Literature review

2.1. Fast food accessibility and the built environment

Traditionally, urban planners have shown the majority of interest in built (i.e., man-made) environments. However, marketers and consumer health advocates have recently devoted considerable attention to built environments (for a review see Ding & Gebel, 2012). One key aspect of built environments is the type and concentration of retail establishments available to consumers (Papas et al., 2007). Prior research on the relationship between retail type, concentration, and consumer health largely focuses on a lack of healthy retail establishments, rather than on the high concentration of unhealthy establishments. For example, researchers have previously focused on food deserts – communities that lack easily accessible and affordable healthy foods (Cummins & Macintyre, 2002). However, little research attention has been devoted to food swamps, or areas characterized by the high accessibility of *unhealthy* foods (Ver Ploeg, 2010). Relatively easy access to less healthful food (such as fast food) may also have a significant impact on national obesity levels (Ver Ploeg et al., 2009).

Franchising has played a key role in the enormous growth of fast food availability around the United States (Ni & Alon, 2010). Currently, over 300,000 fast food restaurants serve over 50 million consumers each day (Pew Research Center, 2012). The location of a retail establishment can be a critical determinant of financial success, especially in the fast food industry where restaurant sites are often strategically selected to increase convenience and maximize long term profits (Karande & Lombard, 2005; Thomadsen, 2007). McDonald's, in particular, has traditionally focused on a strategy centered around high accessibility (Jekanowski, Binkley, & Eales, 2001). This strategy is rooted in the philosophy that the overall number of transactions per capita in a specific market increases as the number of McDonald's restaurants increases (Samuels, 1996). In general, research supports the assumption that greater availability of fast food is associated with increased consumption (Jekanowski et al., 2001). Given the large number of firms providing unprecedented access and convenience, the fact that fast food sales in the United States have skyrocketed from \$16 billion in 1975 to \$190 billion in 2012 is not surprising (Hoovers, 2013). Americans now spend more money on fast food than on books, movies, magazines, newspapers, videos, and recorded music, combined (Schlosser, 2000).

The extensive marketing efforts used by fast food firms to attract and retain customers greatly contribute to the success of the industry. Promotional activities associated with fast food often target vulnerable populations such as the socioeconomically disadvantaged (Larson, Story, & Nelson, 2009). Fast food marketers highlight value and cost savings to appeal to these targeted customers, and further emphasize that fast food products are easy and convenient meal solutions that minimize search and decision costs (Chandon, Wansink, & Laurent, 2000).

2.2. Fast food and children

In the 1980s, U.S. companies spent \$100 million annually marketing to children; now they spend more than \$17 billion (Lagorio, 2009). Television is the most popular fast food advertising medium; the average preschooler sees 2.8 advertisements for fast food per day (Powell, Schermebeck, Szczypka, Chaloupka, & Braunschweig, 2011). Children's heavy exposure to fast food advertising is especially troubling since only a small number of children's meal combinations meet established nutrition criteria for children, and even fewer meals meet specific nutrition standards for preschool children (Harris, Schwartz, & Brownell, 2010).

Fast food firms also locate restaurants in areas that are easily accessible to families with children. For example, prior research shows that fast food restaurants tend to be clustered in school neighborhoods. More specifically, 37% of schools nationwide are within walking distance of at least one fast food restaurant (Zenk & Powell, 2008). One study in Chicago shows that there are three to four times as many fast food restaurants within 1.5 km of schools than would be expected if the restaurants were randomly located throughout the city (Austin et al., 2005). Low-income communities, in particular, tend to have an even greater availability of fast food restaurants near schools (Fleischhacker et al., 2011; Larson et al., 2009).

3. Conceptual development

3.1. Fast food and the economically disadvantaged

Fast food restaurants have historically operated on very modest profit margins, and most of their profitability comes from the sale of traditional fast food menu items such as cheeseburgers, French fries, and high calorie soft drinks (Zmuda, 2012). This pattern of sales may be, in part, attributable to the strategic low pricing of unhealthy items, compared to price premiums placed on more nutritious foods. For example, nearly all fast food firms have adopted everyday low-pricing strategies that offer an assortment of low priced foods (e.g., Sonic's Everyday Deals and Taco Bell's Why Pay More Menu). These lower-price, higher-value offerings appeal to economically disadvantaged consumers and often tend to be relatively unhealthy. As a result of such pricing tactics, the fast food industry has come under fire for stalking the poverty consumer (Hill, 2002).

The practice of targeting lower income customers has led some to question whether differences in food access across socioeconomic status contribute to existing health disparities (Diez-Roux, 2009; Ver Ploeg et al., 2009). Prior research suggests that socioeconomic variables are more strongly related to exposure to fast food outlets than to supermarkets, with higher fast food exposure in more socially deprived areas (Smoyer-Tomic et al., 2008). More specifically, Larson et al. (2009) report that the availability of fast food tends to be greater in lower income neighborhoods than in higher income neighborhoods. In fact, research shows that residents of more socially deprived neighborhoods only have to travel half the distance to fast food outlets, on average, compared to residents of less socially deprived neighborhoods (Pearce, Blakely, Witten, & Bartie, 2007). For example, Powell, Chaloupka, and Bao (2007) examine fast food concentration in 28,000 U.S. ZIP codes and demonstrate that lower-income ZIP code areas had 1.3 times the number of fast-food restaurants than higher-income ZIP code areas. Therefore, the relationship between fast food availability and childhood obesity may be stronger in poorer areas relative to areas not characterized by persistent poverty.

3.2. Fast food and urbanization levels

Recent reviews examining health disparities also suggest important differences in obesity rates based upon other environmental factors such as urbanization levels (e.g., Ahern, Brown, & Dukas, 2011; Trivedi, 2011). As previously mentioned, many urban areas are often

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