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Strategies used by overweight and obese low-income mothers to feed their families in urban Brazil

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ABSTRACT

Objective: To describe and compare strategies adopted by overweight and obese low-income mothers living in different vulnerable contexts to deal with food constraints and feed their families.
Design: Qualitative in-depth interviews. Data were analyzed with exploratory content analysis and the number of segments per theme was used to compare neighborhoods.
Setting: Three low-income neighborhoods in Santos, Brazil.
Participants: A purposive sample of 21 overweight or obese mothers.
Results: We identified three main types of strategies, namely, food acquisition, cooking, and eating. Food acquisition included social support and food-sourcing strategies. Social support strategies ranged from macro (governmental programs) to micro (family) levels. Food-sourcing strategies involved price research and use of credit to buy foods. Cooking approaches included optimizing food (e.g., adding water to beans), avoiding wastefulness, and substitutions (e.g., using water instead of milk when making cakes). Eating themes ranged from lack of quantity to lack of quality. Strategies to deal with the lack of food were affected by family dynamics, such as prioritizing provision of fruits to children. Food choices (e.g., low consumption of fruits and high consumption of fatty meats) derived from strategies may help promote overweight and obesity. Furthermore, for participants, financial constraints were perceived as barriers to following nutritionists' recommendations and weight loss.
Conclusions: This study highlights the barriers that low-income women face in adopting a healthy diet and sheds light on the importance of the symbolic value of food, even in the context of food insecurity. Finally, it suggests that environmental aspects could increase the accessibility to fruits and vegetables. These findings could be used to inform the planning and implementation of interventions.

1. Introduction

The increased prevalence of obesity over the past 20 years has made obesity a public health priority (Totura, Figueroa, Wharton, & Marsiglia, 2015). The positive relationship between poverty and obesity is well documented (Levasseur, 2015; Levine, 2011). In particular, women tend to be affected the most (Ferreira et al., 2010). For example, in Brazil, adult women who experience food insecurity (Adams, Grummer-Strawn, & Chavez, 2003; Loring & Gerlach, 2009) are almost 50% more likely to be obese than are women who are not food insecure (Schlüssel, Silva, Pérez-Escamilla, & Kac, 2013). Given that food exerts a durable effect on health behaviors (e.g., dietary habits and smoking) and other health determinants such as economic opportunities and education, it stands to reason that it is an integral part of the relationship

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between poverty and obesity (Anderson, 2007; Nord, 2014). However, there is limited literature on how food insecurity mediates the relationship between poverty and health outcomes. Therefore, the focus of this study was to determine the effects of financial constraints on the eating practices of obese and overweight women.

The association between a low income and a poor diet quality reportedly originates from the disparity between the costs of energy-dense and nutrient-dense foods and easy access to low-cost energy-dense foods in low-income neighborhoods (Darmon & Drewnowski, 2015). Thus, a member of a low-income group may develop strategies to cope with food insecurity, such as providing food to certain family members only (Aguirré, 2002) and preferring to purchase cheap, energy-dense foods (Drewnowski & Darmon, 2005). However, eating practices derived from strategies adopted by overweight and obese low-income women are still poorly understood.

It is important to determine the coping strategies of low-income populations, to improve understanding of the actions that household decision makers take when facing food constraints (Kempson, Keenan, Sadani, & Adler, 2003; Maxwell, 1996; Oldewage-Theron, Dicks, & Napier, 2006). Mothers are of particular interest, as they are most likely to be the decision makers and, therefore, play a central social role in the family's eating habits and are often responsible for purchasing, preparing, and serving food (Bellows, Valente, Lemke, & Lara, 2016; Sato et al., 2014). Yet, there are very few studies investigating food strategies among low-income women. These would enable a more comprehensive understanding of the social, historical, and symbolic relations built into specific environments and an exploration of the influence of context on eating practices.

Given the global problem of obesity and its comorbidities, nutritional interventions ought to incorporate actions related to food purchasing strategies, targeting those at risk for obesity, such as poor women (Cummins, 2007; O'Kane & Pamphilon, 2016). When considering current public health initiatives to promote healthy diets and food purchasing practices, it is important to improve the efficacy of such programs to determine exactly how low-income women cope with food insecurity. Therefore, this study aimed to describe strategies used to deal with the food insecurity by low-income mothers residing in various socially vulnerable areas, and to clarify how these may be related to their weight status. We sought to answer the following questions: (1) What strategies do low-income urban Brazilian women employ to feed their families? (2) How do these strategies differ across settings? (3) How may these strategies contribute to the weight status of obese and overweight low-income women?

2. Materials and methods

2.1. Study design

We conducted a qualitative study using multiple in-depth interviews as the main source of data, with complementary material from participant observations. This research is part of a larger qualitative whose primary goal was to investigate the eating practices of obese and overweight, socially vulnerable mothers and to explore the relationships between obesity, eating practices, and *habitus*.

2.2. Setting

Santos has 433,966 inhabitants and is located in the southeast region of Brazil. It is characterized by significant social inequality, with the ninth highest per capita income in Brazil and 10% of its residents living in poverty (IBGE, 2015). According to the Paulista Index of Social Vulnerability, 13% of the population of Santos lives in areas classified as highly or extremely vulnerable (SEADE, 2010). Another study observed that 34,000 people in Santos live in precarious conditions (Marques & Gomes, 2008). It is acknowledged that use of the variable, "low income," does not in itself necessarily reflect the complex interaction of factors associated with living in poverty, including area effects (Ferreira et al., 2010). Thus, for this study, we recruited women from the following three areas in the city, which were classified as highly/extremely vulnerable and precarious: mount (shantytown), center (tenements), and northeast (stilt houses) areas.

The shantytown in the mount is characterized by many stairs connecting the narrow streets, many of them in poor conditions. Some houses cannot be accessed by car. The unplanned urbanization of the region resulted in houses in unsafe areas and conditions, which makes many homes susceptible to landslides (Tribuna de Santos, 2010a). The central region hosts old mansions from the 19th century in very poor conditions, with some locked by city officials due to the risk of collapse. The secretariat of planning estimates that none of the houses there meets the sanitary or structural conditions to accommodate human beings. However, single bedrooms are rented out to whole families. Thus, 8 to 12 families share the same house and, most of the time, one or two bathrooms. They have access to a kitchen and do all the cooking in their rooms (Tribuna de Santos, 2010b). The northeast region hosts the biggest stilt houses shantytown in Brazil. The Baixada Santista Habitation Company estimated that in 2007, around 6000 families, with a monthly income of one minimum wage or less, lived in the region (COHAB, 2007).

2.3. Sampling

Recruitment was carried out in two phases. First, participants were purposively sampled through public institutions, via existing projects from the Federal University of São Paulo. The institutions included a social service assistance center (center), a children's after-school program (northeast), and a free clinic (mount). In each institution, one staff member who was familiar with the community introduced the researcher to potential participants, to instill a sense of trust among them and encourage bonding with the researchers, and to ensure the security of the researchers.

Inclusion criteria were as follows: a) being a mother, b) being an adult (18–60 years), c) residing with at least one child, d) being overweight or obese (a body mass index ranging from 25 to 29.9 kg/m^2 or $\geq$30 kg/m^2, respectively) (WHO, 2015), and e) living in one of the regions under study.

The first recruitment phase resulted in a sample of 15 participants (five per region). One researcher performed a brief coding of emerging themes to evaluate saturation (Bernard & Ryan, 2010; Patton, 1990). As coding progressed, new themes were still being found, indicating that saturation had not been reached. Researchers invited new potential participants through the same institutions visited in phase one and interviews were conducted with those who agreed to participate in the study.

Additional coding was performed after adding two new participants from each region, and no new relevant information contributing to the themes of the study emerged. Based on this analysis, the researchers concluded that saturation criteria were met (Bernard & Ryan, 2010; Patton, 1990). The final sample consisted of 21 mothers (seven per region). This study was approved by the Ethics Committee at the university and all interviews were performed once participants had given written informed consent.

2.4. Data collection

Semi-structured in-depth interviews were conducted from