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# Perception of food consumed at home and dietary intake: A nationwide study from Brazil



Appetite

Maria Fernanda Gombi-Vaca, MPH <sup>a, \*, 1</sup>, Paula Martins Horta, PhD <sup>b, 2</sup>, Bruna Kulik Hassan, PhD <sup>a</sup>, Thalita Fialho da Rocha, MS <sup>c</sup>, Laurits Rohden Skov, PhD <sup>d, 3</sup>, Eliseu Verly-Jr, PhD <sup>a</sup>

<sup>a</sup> Department of Epidemiology, Institute of Social Medicine, Rio de Janeiro State University, Rua São Francisco Xavier, 524, 7° Andar, Bloco E, 20550-900, Rio de Janeiro, RJ, Brazil

<sup>b</sup> Department of Nutrition, Federal University of Minas Gerais, Av. Alfredo Balena, 190, 30130-100, Belo Horizonte, MG, Brazil

<sup>c</sup> Institute of Nutrition, Rio de Janeiro State University, Rua São Francisco Xavier, 524, 12° Andar, Bloco D, 20559-900, Rio de Janeiro, RJ, Brazil

<sup>d</sup> Department of Development and Planning, Aalborg University, Vestre Havnepromenade 5, 9000, Aalborg, Denmark

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#### ABSTRACT

Perception of food consumed is a key factor in acknowledging the need for behavioral change to improve diet guality. We analyzed family dietary intake according to the head of household's perception of satisfaction with food consumed by the family. Households (n = 13,351) that participated in the Brazilian Household Budget Survey and the National Dietary Survey were classified as satisfied or dissatisfied with the food consumed in the home. We compared the family dietary intake of the two groups considering their socio-demographic characteristics. Satisfied families (n = 4429) reported statistically higher intake (in grams/1000 kcal) of vegetables (47.3 vs 33.7), fruits (46.9 vs 21.4), sugar-sweetened beverages (118 vs 71.7), milk and dairy (57.9 vs 34.6), and ultra-processed products (18.6 vs 9.8); and lower intake of rice (86.2 vs 112), beans (91.7 vs 136), and meat (76.5 vs 84.0) when compared to dissatisfied families (n = 1717). Among satisfied families, in the youngest group we found lower consumption of fruits and higher intake of sugar-sweetened beverages and ultra-processed products when compared to the oldest group. Also among satisfied families, those in the highest per capita income group presented higher intake of fruits and lower intake of beans than those in the lowest income group. Satisfied families in the highest income group also consumed more fruits and less beans than dissatisfied families in the same income group. Socio-demographic characteristics may influence perception of satisfaction with food consumed and potentially influence the success of public health efforts to offer nutrition guidance for families satisfied with diets that may or may not be comprised of healthy food and beverages.

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#### Introduction

Abbreviations: SSB, sugar-sweetened beverages; UPP, ultra-processed products; HBS, Household Budget Survey; NDS, National Dietary Survey.

Corresponding author.

E-mail address: mafegombi@gmail.com (M.F. Gombi-Vaca).

<sup>1</sup> Present address: Department of Preventive Medicine, Faculty of Medicine, University of São Paulo. Av. Dr. Arnaldo, 455, 2°. Andar, 01246-903, São Paulo, SP, Brazil.

http://dx.doi.org/10.1016/j.appet.2017.05.036 0195-6663/© 2017 Elsevier Ltd. All rights reserved. An unhealthy diet is among the main risk factors for chronic diseases and of great concern to public health (World Health Organization, 2013). Diet-related diseases affect people across all age groups, social classes and national borders. These non-communicable health complications are starting to increase within the Brazilian population, and therefore efforts to improve diet are highly needed (Schmidt et al., 2011). Moreover, the average Brazilian diet is low in a range of nutrients (Araujo et al., 2013), low in fruit and vegetable intake (Souza, Pereira, Yokoo, Levy, & Sichieri, 2013), high in sugar, saturated and trans-fat, and sodium intake (Araujo et al., 2013; Pereira, Duffey, Sichieri, & Popkin, 2014), and

 <sup>&</sup>lt;sup>2</sup> Present address: University Centre of Belo Horizonte. Av. Professor Mario Werneck, 1685, 30575-189, Belo Horizonte, MG, Brazil.

<sup>&</sup>lt;sup>3</sup> Present address: Consumer Policy Division, Danish Competition and Consumer Authority, Carl Jacobsens Vej 35, 2500, Valby, Denmark.

with low adherence to the national dietary guidelines (Verly Junior, Carvalho, Fisberg, & Marchioni, 2013).

Some approaches to promoting healthier diet have focused on collective and contextual factors, while others perceive the problem in a personal context, and place the responsibility of diet choice at the individual level (Roberto et al., 2015; Schermel et al., 2014). The success of primary and secondary interventions that aim to improve one's diet depends on the individual's motivation to change (Lake et al., 2007; Variyam, Shim, & Blaylock, 2001). In this sense, a key factor to encourage behavioral change is individual acknowledgement of an unhealthy diet pattern.

However, an individual's perception of satisfaction with food consumed may or may not reflect actual diet quality. A British study observed that individuals reporting healthy eating patterns had better profiles of nutrient intake and food consumption (Lake et al., 2007). In the study, the group of individuals that agreed with the statement "My eating patterns are healthy" presented lower intake of foods high in fat and/or sugar, and of meat, fish, and alternatives, as well as higher consumption of fruit and vegetables when compared to the group that disagreed with the statement. In contrast, a study with American household meal planners showed that about 40% perceived their diet quality as better than measured (Variyam et al., 2001).

In this study, we aimed to compare Brazilian families' food and nutrient consumption according to the head of household's perception of satisfaction with the food consumed at home. Moreover, we examined this relationship according to sociodemographic factors.

#### Methods

#### Study population

Data from the Brazilian Household Budget Survey (HBS) 2008-09 was analyzed along with the first National Dietary Survey (NDS) conducted by the Brazilian Institute of Geography and Statistics. The HBS adopted a two-stage complex cluster sampling, in which primary sampling units were selected by systematic sampling with proportional probability to the number of households according to the 2000 Brazilian Demographic Census (IBGE, 2010). In the second stage of selection, permanent households were selected by simple random sampling without replacement within each sector. Households were evaluated over 12 consecutive months. For the NDS, 25% of the households from the HBS were selected by simple random sampling, totaling 13,569 households (IBGE, 2011).

## Perception of satisfaction with food consumed and actual food consumed in the household

Perception of satisfaction with food consumed by the family was assessed through the following question: "From the statements below, which one best describes the type of food consumed by your family?" The options were: "(1) It is always the type of food we want; (2) Sometimes it is not the type of food we want; (3) It is seldom the type of food we want" (IBGE, 2010). The respondent refers to the family member responsible for household expenses or the one claimed to be the head of the household by other household members. For this study, we considered the first and the third answer options, which aim to assess the family's contentedness with the household diet, to classify households in one of two categories, respectively: *satisfied* households, in which family members "always consumed the type of food they want" (first answer), or *dissatisfied* households, in which family members "seldom consumed the type of food they want" (third answer).

Family members 10 years-old or older completed food records

over two non-consecutive days of the same week. Subjects reported all food and beverages consumed along with the time of day, amount consumed in portion sizes, preparation form, and location (at home or away from home). In order to ensure correct recording, each participant received instructional material with guidelines on filling out the food record and photographs of utensils commonly used to serve the foods and beverages (IBGE, 2011). A detailed protocol of the survey is found elsewhere (Pereira et al., 2014).

We included in our study only the records of food consumed at home, as the respondent's perception of food consumed away from home was assumed to be less accurate. We then analyzed the subjects' dietary intake during the three main daily meals: breakfast, lunch, and dinner (Gombi-Vaca, Sichieri, & Verly-Jr, 2016), which are meals traditionally shared among family members. The calorie-adjusted mean family intake (food or nutrient/1000 kcal) was calculated for the following foods: rice, beans, total meat, processed meat, milk and dairy products, fruits, vegetables, sugar-sweetened beverages (SSB), and ultraprocessed products (UPP); and for the following nutrients: carbohydrate, protein, total and saturated fats, added sugar, total fiber, vitamin C, folate, calcium, sodium, phosphorus, and magnesium. The UPP group was defined according to Monteiro, Levy, Claro, Castro, and Cannon (2010), in which foods are categorized by their level of industrial processing as well as by their purpose (Monteiro et al., 2010).

#### Data analysis

Mean intake and 95% confidence intervals were obtained and compared for each food group and nutrient for satisfied and dissatisfied households. Household groups were considered statistically different when their 95% confidence intervals did not overlap. For the analyses of food groups, we stratified households by quartiles of respondent age and by quartiles of household per capita income. The first quartile of respondent age corresponded to the "youngest", and the fourth quartile to the "oldest". Likewise, the first quartile of per capita income corresponded to "lowest" and the fourth quartile to "highest". Data analyses were conducted in Stata (v.13.0) considering the sample weight and complex sample design.

The Committee of Ethics in Research of the Institute of Social Medicine approved this research protocol (CAAE 0011.0.259.000–11).

#### Results

Of the study subjects, 240 families did not answer the question about perception of food consumed or had no food consumption in the three meals at home. Thus, the sample analyzed included 13,351 families, 4429 (33.2%) of which always consumed their

#### Table 1

Respondent and household characteristics by perception of family food consumption, Brazil, 2008-09 (n = 6146).

Characteristics	Perception of family food consumption			
	Satisfied		Dissatisfied	
Household Average age (years) Per capita income (US\$) Respondent	Mean (%) 38.7 734	95% CI [37.9, 39.5] [654, 813]	Mean (%) 31.7 190	95% CI [30.5, 32.8] [168, 211]
Schooling (years) Age (years) Body Mass Index (kg/m²)	9.4 45.8 26.2	[9.0, 9.7] [45.0, 46.5] [26.0, 26.4]	5.8 43.8 25.6	[5.3, 6.3] [42.7, 44.9] [25.3, 25.9]

Note. CI = confidence interval. Average currency value in 2008-09: US\$ 1 = R\$ 2.38.

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