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Prevalence and energy intake from snacking in Brazil: analysis of the first nationwide individual survey

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Abstract

Background/Objectives—Snacking has increased globally. We examine snacking patterns and common snack foods in Brazil.

Subjects/Methods—Data from the first of two non-consecutive food diaries from 34,003 individuals (aged 10 years) in the first Brazilian nationally representative dietary survey (2008-2009) were used. Meals were defined as the largest (kcal) eating event reported during select times of the day (Breakfast, 6am-10am; Lunch, 12pm-3pm; Dinner, 6pm-9pm); all other eating occasions were considered snacks. We estimate daily energy intake, percent consuming, number of daily snacks, and per capita and per consumer energy from snacks (kcal/d, kcal/snack, and % of daily energy from snacks).

Results—74% of Brazilians (10 years) snacked, reporting an average 1.6 snacks/d. 23% of the sample were heavy snackers (3 snacks/d). Snacking accounted for 21% of daily energy intake in the full sample, but 35.5% among heavy snackers. Compared to non-snackers (1548 kcal/d), light (1-2 snacks/d) and heavy snackers consumed more daily energy (1929 and 2334 kcal/d, respectively). By time of day, the largest percent of persons reported afternoon/early evening snacking (3:01-5:59 pm, 47.7%). Sweetened Coffee & Tea, Sweets & Desserts, Fruit, Sugar-Sweetened Beverages (SSB), and high-calorie Salgados (Fried/baked dough with Meat/Cheese/Vegetable) were the top 5 most commonly consumed snacks. Differences were observed by age groups. Trends in commercial sales were observed, especially for SSB's.

Conclusions—Many commonly consumed snack foods in Brazil are classified, in the US, as being high in solid fats and added sugars (SoFAS). The public health impact of snacking in Brazil requires further exploration.

Keywords

snacking; Brazil; energy intake; adolescents; adults

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Introduction

Changes in dietary behaviors have received considerable attention as the worldwide prevalence of obesity has risen [1]. Snacking, in particular, has become the focus of much research as snack items are often highly processed food stuffs which tend to be higher in added fat, added sugar, and salt [2]. The extent to which snacking affects total energy intake or diet quality is only minimally understood [3-6], and to the extent that sugar-sweetened beverages, high-fat/added-sugar desserts, and salty, fatty savory items are major elements in snacks, there is potential for adverse cardio-metabolic outcomes [7-9]. Research from the US suggests snacking represents a major contributor to increased energy intake over the past thirty years [10]. The prevalence and trends of snacking behaviors have mainly been examined in the US and other higher-income countries, with limited studies in low-to middle-income countries [11-18]. The extent to which snacking occurs among Brazilian individuals is unexplored in national studies.

Brazilians have experienced, and are continuing to undergo, a transition from the traditional dietary pattern to diets high in saturated fat and sugar [2, 19, 20]. This shift has been accompanied by rapid increases in the use of modern supermarkets, increased mass media promotion of food and beverage products, and availability of highly processed food items [21-25], all of which typify snack foods and are linked to snacking behaviors. At the household level, studies have documented an increase in expenditures on ultra-processed foods [26]. Sugar and soft drink consumption has risen sharply in the past decades and one study suggested they account for about 13% of total household energy availability [25, 27, 28].

Using the first nationally representative individual dietary survey conducted in Brazil, the purpose of the present study was to (a) examine patterns in snacking behavior and (b) identify the most important foods contributing to energy from snacks among Brazilian adolescents and adults.

METHODS

Study design and sample

Data from this study were drawn from the first Individual Dietary Survey (IDS) carried out by the Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics or IBGE) as part of the 2008-2009 Brazilian Household Budget Survey (HBS). HBS investigated a probabilistic sample of 55,970 households selected by a two-stage complex cluster sampling design [29] with 25% of these households randomly selected for inclusion in the dietary survey. Details on the sampling procedures are reported elsewhere [30]. Our final sample consisted of 34,003 individuals aged 10 years and older from 13,569 households [29].

The IDS protocol was approved by the Ethics Research Committee from the Institute of Social Medicine (University of the State of Rio de Janeiro).

Assessment of food intake

Individuals completed two non-consecutive food diaries on pre-determined days spanning one week. They were asked to report all foods and beverages consumed and to include information on time (recorded by the hour, on the hour), amount, place of intake (inside or outside home), and details on preparation mode (for specific foods, mainly meats and vegetables). Information on water and use of nutritional supplements was not collected. During in-person interviews, trained interviewers then reviewed the food records and probed

the participants on commonly forgotten foods and for periods longer than three hours without reported food intake.

Food composition estimates were based on the NCC Nutrient Databank [31] and on the Brazilian Food Composition Table [32]. Portion size measures came from various Brazilian publications and/or direct weighing of some foods and dishes. The definition of standard units and dilution decisions were standardized based on Brazilian research [29]. Nutritional composition for dishes based on meat, fish, and poultry, and cooked or braised vegetables were estimated with the addition of soybean oil [31]. Details of the pre-test, interviews and interviewer training process, and the validation study of data collection protocol are presented elsewhere [29, 33]. For this study, only the first day of dietary intake was used.

Defining Meals and Snacks

Respondents were not asked to self-identify eating occasions into type, so we created a set of standard rules regarding the classification of eating occasions into meal or snack events based on the time of day the eating occasion occurred. We considered the largest (by calories) eating occasion occurring during the following times to be a meal: Breakfast, 6am-10am; Lunch, 12pm-3pm; Dinner, 6pm-9pm. All eating occasions falling outside these time frames, and other smaller eating occasions within these meal time frames were considered snacks. For example, since eating occasions were reported on the hour, it was possible for an individual to have two eating events within a time frame (e.g. 12pm -3pm) that would be considered, in this case, lunch. If this occurred, the eating occasion with the larger caloric value was considered the meal (lunch), the smaller was called a snack. All eating occasions were assigned as meals before being assigned as snacks, thus persons who reported three or fewer eating occasions were considered to have only consumed breakfast, lunch, and/or dinner (with the first reported eating occasion being called breakfast, the second lunch, and the third dinner).

Brazilian sales data

We collected sales data from 1997 to 2011 from Euromonitor International's Passport Global Market Information Database (GMID)[34]. These data were collected to provide trends in a national measure of purchasing of the top snacks foods reported as consumed by our sample.

Statistical Analyses

All analyses were conducted in SAS 9.3 (Cary, NC). We calculated mean (SE) for per capita (entire sample, regardless of snacking) and per consumer (among snackers only) energy per snack (kcal/snack), total daily snack energy (kcal/d from snacks), and total daily energy (kcal/d from meals plus snacks). Among snackers, we also calculated the size of snacks (grams/snack), and the average number of daily snacks. Degree of snacking was defined as Non-Snacker (0 snacks/d), Light Snacker (1-2 snacks/d), and Heavy Snacker (3 snacks/d). In the full sample, we also calculated the mean percent (SE) consuming snacks. Results are presented by age group (<10 years and 10-18 years, 19-39 years, 40-59 years, and ≥60 years) and by snacking event (early morning, 12-5:59 am; late morning, 10:01-11:59 am; afternoon/early evening, 3:01-5:59 pm; and late night, 9:01-11:59 pm). Statistical significance was determined using student's t-test (for continuous) and chi-squared tests (for categorical) between groups. All results are weighted to be nationally representative and account for survey design.

Results

Who snacks

Seventy four percent of Brazilians aged 10 and older reported consuming an average of 1.6 snacks per day, with almost 23% reporting ≥ 3 snacks per day (defined as heavy snackers; Table 1). A greater proportion of females compared to males were snackers (mean (SE): 76.9 (0.6)% vs. 70.9 (0.7)% respectively), but they reported similar numbers of daily snacks (1.6 (0.02) vs. 1.4 (0.02) respectively). Individuals residing in the Northeast reported the smallest percent of snackers (66.2 (0.9)%) with the largest difference (compared to the other four regions) in the percent of heavy snackers (Table 1). There were smaller percentages of snackers among those with lower levels of education and in the lowest income quartile with the greatest difference again in the proportion who were heavy snackers.

Nutritional impact of snacking

The lowest percent of daily energy from snacks was reported among 40-59 year olds (17%, Figure 1) while ≥ 60 year olds reported the smallest daily caloric intake (1640 kcal/d, Figure 1). Greater than 90% of the sample across all age groups reported consuming each of the three meals (breakfast, lunch, and dinner) and greater than 70% of the sample reported snacking (Appendix 1). Light (1-2 snacks/d) and heavy (≥ 3 snacks/d) snackers consumed significantly more daily energy than non-snackers (mean (SE): 1929 (12) kcal/d, 2334 (19) kcal/d, and 1548 (15) kcal/d respectively, $p < 0.001$ [results not shown]). The contribution of meals and snacks to total energy intake by age group is detailed in Appendix 1.

Among those who snack (≥ 10 years old) the largest proportion are considered light (compared to heavy) snackers (51.5% and 22.5% respectively, Table 2). Although light snackers consume more energy per snack compared to heavy snackers (280 kcal vs. 233 kcal respectively), heavy snackers consumed nearly twice as many calories per day from snacks compared to light snackers (832 kcal vs. 422 kcal respectively) and snacks account for a larger percent of heavy snackers' total daily energy (35.5% vs. 21.7%; Table 2). Again, important differences across age groups were observed, with light and heavy snackers aged 10-18 years old reporting the largest energy intake per snack, energy per day from snacks, and percent of daily total energy from snacks (Table 2). Details on the per capita (entire sample) and per consumer (among snackers only) energy from each snack event and daily energy intake from snacks are detailed by age group in Appendix 1.

By time of snacking event, in the full sample (≥ 10 years old) and across all age groups, late morning and late night snacks account for the largest volume (grams/snack) and energy (kcal/snack) from snacks, while early morning snacks account for the smallest (Table 3). The largest number of snacks are reported in the afternoon/early evening (1.24 in the full sample, compared to 1.15 (early morning), 1.17 (late morning), and 1.05 late night, Table 3), which is also the time of day when the largest percent of persons report consuming a snack (Table 3). These patterns are true across all age groups. Despite accounting for some of the largest (in terms of grams/snack and kcal/snack) snacks, late night snacks were reported as consumed by the smallest percent of the sample across all age groups (ranging from 1.5% in the ≥ 60 year olds to 7.1% in the 19-39 year olds; Table 3).

Top 5 snack foods

In the full sample and all age groups except the 10-18 year olds, Sweetened Coffee & Tea topped the list as the most commonly consumed snack food (46.2%, Table 4). However, Sweets & Desserts provided the most energy per capita and per consumer despite being consumed by fewer people (31.5% of the full sample). Across all age groups, Sweetened Coffee & Tea, Sweets & Desserts, and Fruit were among the top 5 most commonly

consumed foods (Table 4). Sugar Sweetened Beverages were the second most commonly consumed snack food among 10-18 and 19-39 year olds, and the fifth most commonly consumed food among 40-59 year olds. Fried/baked dough with Meat/Cheese/Vegetables (Salgados) and Breads also topped the list in certain age subgroups (Table 4).

National trends in top 5 snack foods and beverages

Using Euromonitor data to examine trends in these top food groups (those presented in Table 4), we find that consumption, especially of the sugar-sweetened beverages, has risen dramatically in Brazil over the last decade and continues to rise in the period following this survey (Figure 2). Intake of cola carbonates has increased from 19.7 liters per capita in 1997 to 33.7 liters per capita in 2011. Similarly, consumption of non-cola carbonates, juice drinks, and sports & energy drinks has also increased (Figure 2a). Although Sweets & Desserts were among the top 5 foods reported as snacks among our nationally representative sample, the per capita consumption (in kg) of baked goods, biscuits, and sugar confectionary reported by the Euromonitor sample has remained relatively stable or decreased slightly since 1998 (Figure 2b).

Discussion

Seventy-four percent of Brazilians reports consuming at least one snack each day, and snacking accounts for between 17% and 22% of total daily energy intake, depending on age group. The average Brazilian is consuming 1.6 snacks per day. Among snackers (persons who report consuming at least one snack per day), the average person consumes 2.2 snacks per day and snacking accounts for between 23.9 and 28.5% of total daily energy, again depending on age group. Sweetened Coffee & Tea, Sweets & Desserts, and Fruit are among the top 5 food groups consumed as snacks in the full Brazilian population and across all age groups. Sugar Sweetened Beverages, Fried/baked dough with Meat/Cheese/Vegetables (Salgados) and Breads were also in the top 5 most commonly consumed snack foods listed. Commercial sales data suggest that at least some important snack foods had increased significantly in the last decade, suggesting potentially a major increase in the impact of snacking in the Brazilian diet.

Minimal research exists on snacking among low- to middle-income countries like Brazil. A small number of earlier Brazilian studies examined meal patterns and school snacks in adolescents and found that 23% did not have breakfast on a daily basis and 40% reported replacing dinner with snacks at least once a week [35]. In a smaller study among adolescents, Bismarck-Nasr et al. [36] observed that the mean energy intake from snacks was 680 kcal and 609 kcal among boys and girls respectively, slightly higher than the 512 kcal/d from snacks reported by 10-18 year olds in our study. Data on household food availability has also shown that the consumption of foods usually consumed as snacks (e.g. cookies and crackers) increased >300% in the metropolitan areas in Brazil [37], with ultra-processed foods contributing roughly 28% to total household energy availability [38].

China is one of the few other low- to middle-income countries with nationwide studies on snacking where this dietary behavior emerged only in the past decade. Chinese adults report increases in the prevalence and frequency of daily snacking occasions and the percentage of total daily energy intake from snacks across all ages between 1991 and 2009 [18]. In the China sample, evening was the preferred snacking occasion, and the proportion of total daily energy from snacks varied between 4.1% and 12.3%. Fruits, Grains, and Beverages were the most popular snacks and the highest contributors to snacking energy [18].

In contrast there is extensive data on snacking from the US and other higher income countries. In the US, snacking represents about 20-27% of the kcal/d of total energy [15-17,

39]. Using nationally representative data from the What We Eat in America dietary intake survey of NHANES, studies have demonstrated significant increases over the past 30 years in the number, size, and energy from snacks among children [16] and adults [15, 17]. In children, snacking trends are moving toward three snacks per day, and more than 27% of children's daily calories are coming from snacks [16]. Similarly among adults, the prevalence of snacking has increased from 71% to 97% in 2003-2006, with increases in both the 1989-1994 and the 1994-2006 time periods. In 2003-06, snacking accounted for 24% of daily energy intake [15]. Important changes in snack foods were found among desserts, salty snacks, candies, and sweetened beverages [15].

Our results are in line with other studies in a number of higher income countries. Adolescents in Britain (1997) and Northern Ireland (2005) reported a greater proportion of daily energy from snacks in 2005 (32.5%) compared to 1997 (29.8%) and, although popular snack options at both time points, the serving size and frequency of consumption of sugar-sweetened beverages (carbonated soft drinks) was higher in 2005 compared to 1997[12]. In the United Arab Emirates, as was reported in Brazil, snacking represents a major source of daily energy intake (>20% of daily total calories) and caloric beverage consumption represents 8-14% of total calories [14].

We acknowledge several limitations. First, we do not have a standard measure of snacking because individuals do not self-identify eating occasions as meals or snacks. Our method for classifying an eating occasion as a meal or snack provides a potentially conservative measure of snacking though it is impossible to truly understand the measurement error associated with this definition. By classifying the largest eating event during a given time period as a meal, we have likely mislabeled some eating events. Further by having eating events measured only in hourly periods, we miss any snacking occasion that occurs over shorter periods (e.g. a snack consumed at the half hour would be combined with the eating occasion on the hour). However, previous research has shown that the largest caloric values for an eating occasion still tend to be at meals, not snacks [17, 40-42] and a small observational study of adolescents in Brazil found that a majority consumed breakfast between 6:00 am and 11:30 am [43] (similar to the time frame we use for breakfast).

Second, despite efforts to obtain reliable food composition data, for some foods the nutritional composition was not available in the Brazilian Food Composition Table (TACO). The latest version of TACO contains information on the nutritional composition of about 600 food items [44], while approximately 2000 foods and preparations were cited in the Brazilian IDS. To fill in the gaps, the Brazilian IBGE had to rely on estimations based on similar preparations or foreign foods. Finally, this analysis is based only on the first day of food records, however it is recognized that a single 24-h recall and food record provides a decent estimate for population means in extent studies[45, 46].

There are several strengths of this study. The Brazilian IDS food records were evaluated and were shown to provide an accurate estimation of energy intake in the population [47]. Additionally, the estimates for the intake of energy and nutrients were comparable with data obtained in similar studies [48-50]. Finally, these analyses use nationally representative population-based dietary intake data on a very large sample of individuals (>34,000).

This is the first study to show that snacking is prevalent among Brazilians and is an important contributor to daily energy intake. Snacking, per se, is not necessarily an unhealthy behavior [5, 51], and eating frequency is a behavior that has actually been associated with some positive health outcomes in weight loss interventions [52-55]. Our cross-sectional association findings did show considerably higher daily energy intake among snackers (1929 and 2334 kcal among light and heavy snackers, respectively) compare to

non-snackers (1548 kcal, results not shown elsewhere). However, our findings highlight that many of the foods commonly consumed as snacks would be classified as foods high in solid fats and added sugars (SoFAS) in the US [56, 57] and represent key targets for food and nutrition policies or other individual or environmental-level intervention efforts aimed at reducing daily energy intake and improving dietary quality in this population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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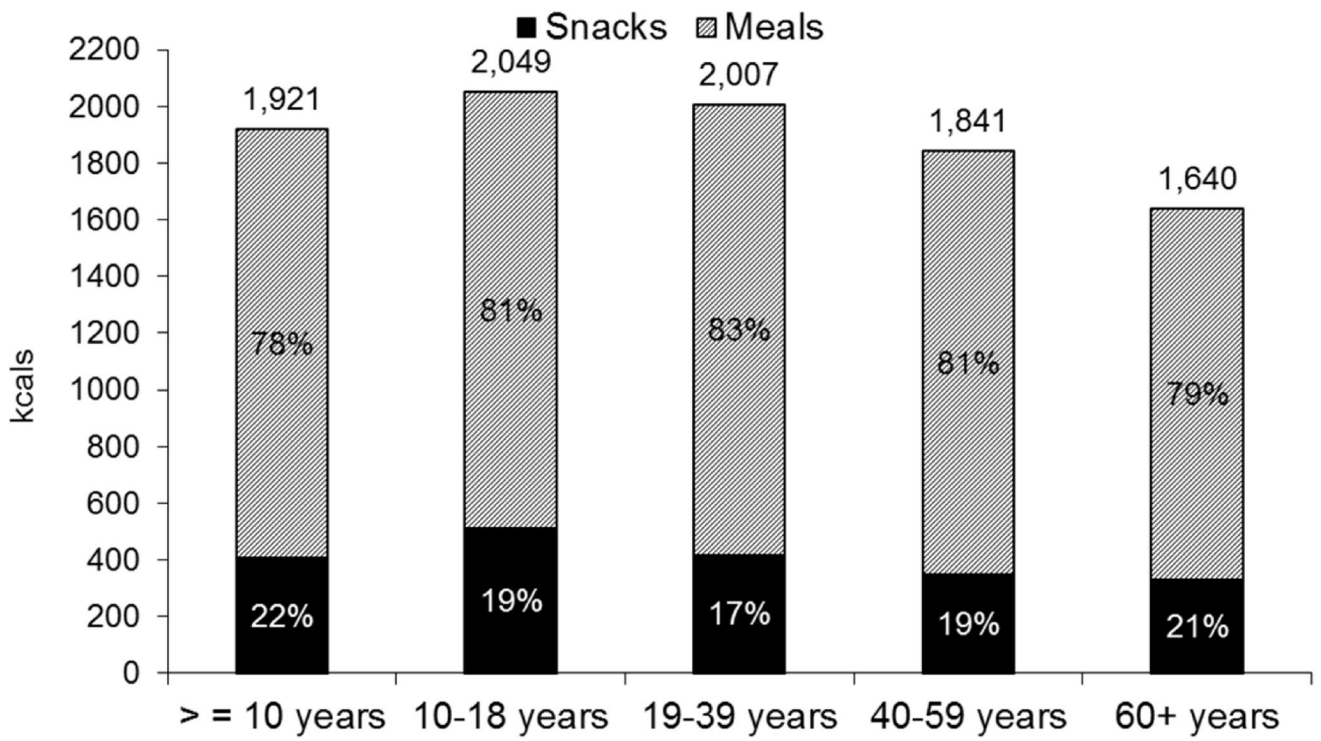


Figure 1.
 Per capita¹ percent of energy from snacks by age group
¹ Per capita estimates apply to the entire sample.

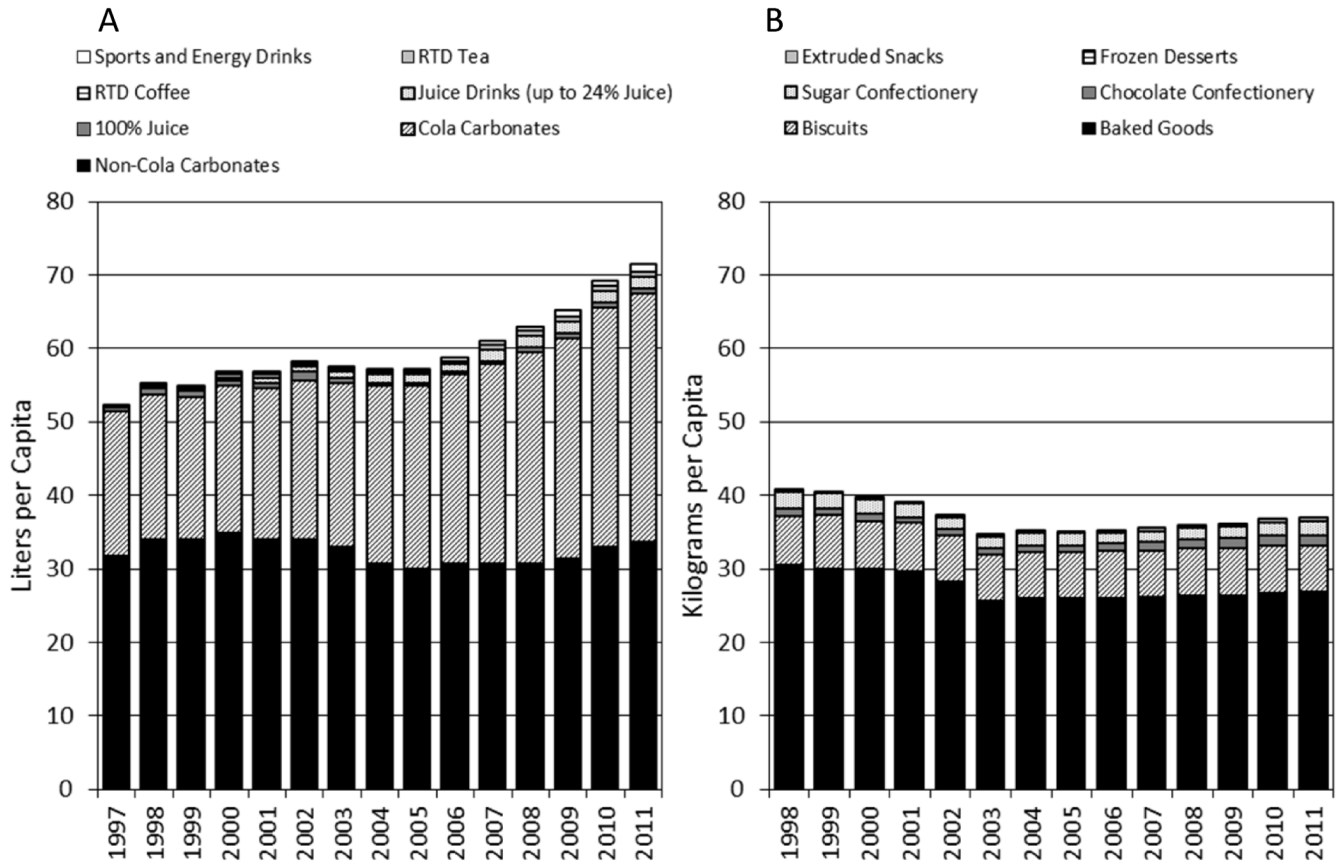


Figure 2. Beverage (a) and food (b) consumption in Brazil using historical data from Euromonitor¹ data from Euromonitor International's Passport Global Market Information Database (GMID)

Table 1
Distribution of sociodemographic characteristics of persons who snack and by degree of snacking

	Sample size	Percent who snack, % (SE)	Number of Snacks, n/d (SE)	Degree of Snacking, % (SE)		
				Non-snacker (0 times/d)	Light snacker (1-2 times/d)	Heavy snacker (> 3 times/d)
Sample size, n (%)	--	24239 (73.9)	--	9674 (26.0)	17244 (51.4)	6995 (22.5)
Brazil (Total)	34 003	74.0 (0.5)	1.6 (0.02)	26.0 (0.5)	51.5 (0.5)	22.5 (0.5)
Gender						
Female	18 303	76.9 (0.6)	1.6 (0.02)	23.1 (0.6)	52.7 (0.7)	24.2 (0.6)
Male	15 700	70.9 (0.7)	1.4 (0.02)	29.1 (0.7)	50.2 (0.7)	20.7 (0.6)
Age (y)						
10-18	6 939	78.7 (0.9)	1.6 (0.03)	21.3 (0.9)	53.2 (1.0)	25.5 (0.9)
19-39	13 849	72.2 (0.7)	1.4 (0.02)	27.8 (0.7)	50.2 (0.7)	22.0 (0.7)
40-59	8 893	72.9 (0.8)	1.5 (0.03)	27.1 (0.8)	51.9 (0.9)	21.1 (0.8)
60	4 322	74.8 (1.4)	1.5 (0.04)	25.2 (1.4)	52.2 (1.4)	22.6 (1.2)
Urbanicity						
Rural	8 250	71.7 (1.2)	1.4 (0.04)	28.3 (1.2)	50.5 (1.2)	21.3 (1.0)
Urban	25 753	74.5 (0.6)	1.5 (0.02)	25.5 (0.6)	51.7 (0.6)	22.8 (0.5)
Region						
North	5 274	73.9 (1.1)	1.5 (0.04)	26.1 (1.1)	52.4 (1.1)	21.5 (1.0)
Northeast	12 615	66.2 (0.9)	1.3 (0.03)	33.8 (0.9)	48.2 (0.8)	18.0 (0.7)
Southeast	7 302	77.8 (1.0)	1.6 (0.03)	22.2 (1.0)	52.7 (1.0)	25.1 (0.9)
South	4 167	78.5 (1.2)	1.6 (0.04)	21.5 (1.2)	54.0 (1.3)	24.5 (1.1)
Central West	4 645	72.4 (1.2)	1.4 (0.04)	27.6 (1.2)	50.8 (1.3)	21.6 (1.1)
Years of Education						
Education <8yrs	19 041	72.2 (0.7)	1.4 (0.02)	27.8 (0.7)	51.2 (0.7)	21.0 (0.6)
Education 8yrs	14 746	75.9 (0.7)	1.6 (0.02)	24.1 (0.7)	51.8 (0.8)	24.1 (0.7)
Per Capita Family Income						
Quartile 1	10 719	66.7 (1.0)	1.2 (0.03)	33.3 (1.0)	50.0 (1.0)	16.6 (0.8)
Quartile 2	9 154	74.0 (1.0)	1.5 (0.03)	26.0 (1.0)	51.8 (1.0)	22.1 (0.9)
Quartile 3	7 727	75.7 (1.1)	1.5 (0.04)	24.3 (1.1)	52.2 (1.2)	23.5 (1.0)

	Sample size	Percent who snack, % (SE)	Number of Snacks, n/d (SE)	Degree of Snacking, % (SE)		
				Non-snacker (0 times/d)	Light snacker (1-2 times/d)	Heavy snacker (3 times/d)
Quartile 4	6 403	79.7 (1.1)	1.8 (0.04)	20.3 (1.1)	51.9 (1.2)	27.9 (1.0)
Location of consumption ¹						
Eat-In	12 542	82.5 (0.7)	1.8 (0.03)	17.5 (0.7)	52.3 (0.8)	30.2 (0.8)
Eat-Out	21 461	68.3 (0.7)	1.3 (0.02)	31.7 (0.7)	50.9 (0.7)	17.4 (0.5)

¹ Denotes whether or not the individual reported eating any food away-from-home on the day of the dietary interview. Eat In: all foods consumed were consumed at home; Eat Out: at least one eating occasion was not at home.

Table 2Contribution¹ of snacking to energy intake by degree of snacking and age

Age Group	Degree of Snacking	
	Light snackers (1-2 times/d)	Heavy snackers (3 times/d)
10 y		
% snacking	51.5 (0.5)	22.5 (0.5)
kcal/snack	280 (4)	233 (3)
kcal/d from snacks	422 (6)	832 (12)
% total kcal from snacks	21.7 (0.2)	35.5 (0.3)
10-18 y		
% snacking	53.2 (1.0)	25.5 (0.9)
kcal/snack	325 (8)	269 (7)
kcal/d from snacks	504 (14)	954 (26)
% total kcal from snacks	23.3 (0.4)	38.1 (0.7)
19-39 y		
% snacking	50.2 (0.7)	22.0 (0.7)
kcal/snack	298 (5)	252 (5)
kcal/d from snacks	440 (8)	894 (18)
% total kcal from snacks	21.7 (0.3)	36.2 (0.5)
40-59 y		
% snacking	51.9 (0.9)	21.1 (0.8)
kcal/snack	249 (5)	198 (6)
kcal/d from snacks	377 (9)	720 (21)
% total kcal from snacks	20.3 (0.4)	32.7 (0.7)
60y		
% snacking	52.2 (1.4)	22.6 (1.2)
kcal/snack	229 (6)	188(5)
kcal/d from snacks	342 (10)	661 (18)
% total kcal from snacks	21.3 (0.6)	34.4 (0.8)

¹Estimates are mean (SE). Percent snacking is the percent of the sample reporting consuming any snacks.

Table 3

Percent consuming^{1,2} and per consumer gram³ and energy⁴ consumption by time⁵ of snacking event and age group

	Snacking Event			
	Early morning 12 – 5:59 am	Late morning 10:01-11:59 pm	Afternoon/early evening 3:01-5:59 pm	Late night 9:01-11:59 pm
10 years				
% consuming	32.4 (0.6)	40.7 (0.6)	47.4 (0.6)	15.9 (0.5)
Number of snacks	1.15 (0.01)	1.17 (0.01)	1.24 (0.01)	1.05 (0.01)
Grams/snack	185.0 (2.8)	294.0 (4.6)	235.7 (3.0)	309.6 (8.3)
kcal/snack	150 (2)	334 (6)	253 (3)	336 (9)
By Age Group				
10-18 years				
% consuming	6.6 (0.2)	9.2 (0.3)	9.8 (0.3)	2.9 (0.2)
Number of snacks	1.12 (0.01)	1.19 (0.01)	1.25 (0.01)	1.06 (0.02)
Grams/snack	182.4 (4.1)	280.7 (7.3)	230.5 (5.0)	321.5 (12.7)
kcal/snack	181 (4)	356 (11)	304 (8)	392 (18)
19-39 years				
% consuming	11.9 (0.3)	15.5 (0.4)	18.5 (0.4)	7.1 (0.3)
Number of snacks	1.14 (0.01)	1.16 (0.01)	1.24 (0.01)	1.04 (0.01)
Grams/snack	191.1 (4.7)	309.2 (7.0)	246.5 (5.0)	327.3 (11.1)
kcal/snack	164 (5)	351 (8)	264 (5)	371 (15)
40-59 years				
% consuming	9.1 (0.3)	10.3 (0.3)	12.7 (0.3)	4.4 (0.2)
Number of snacks	1.18 (0.02)	1.18 (0.02)	1.24 (0.01)	1.04 (0.01)
Grams/snack	179.7 (4.9)	287.2 (7.6)	232.4 (5.9)	294.2 (19.3)
kcal/snack	129 (4)	304 (9)	222 (6)	278 (15)
60 years				
% consuming	4.8 (0.2)	5.7 (0.2)	6.4 (0.3)	1.5 (0.2)
Number of snacks	1.17 (0.02)	1.15 (0.02)	1.22 (0.02)	1.06 (0.02)
Grams/snack	183.7 (7.3)	286.8 (8.0)	218.5 (6.4)	247.5 (17.1)
kcal/snack	110 (4)	306 (10)	199 (6)	231 (16)

- ¹ Percent of the sample that reported consuming at least one snack during this time period (e.g. Early-Morning).
- ² Average number of snacks reported during this time period (e.g. Early -Morning) per consumer (among snackers).
- ³ Average grams per snack reported during this time period (e.g. Early -Morning), per consumer (among snackers).
- ⁴ Average calories per snack reported during this time period (e.g. Early -Morning), per consumer (among snackers).
- ⁵ Meal times are as follows: Breakfast: 6-10 am; Lunch: 12-3 pm; Dinner: 6-9 pm. If a person has two eating occasions that fall within a meal time, the larger (greater kcal value) was considered a meal, the smaller a snack, and the snacking event was combined with the earlier snacking period (i.e. a snack occurring between 6 and 10 am were considered an early morning snack).

Top 5 food groups¹ according to percent consumption² and their contribution to daily energy from snacks³ among snackers in Brazil, by age

Table 4

Food groups	Percent consuming ¹		Energy from snack food			
	%	SE	Per Capita Kcal/d	SE	Per Consumer Kcal/d	SE
10 years						
Sweetened Coffee & Tea	46.2	0.6	43	1	92	2
Sweets & Desserts	31.5	0.6	84	3	265	6
Fruit	31.1	0.6	41	1	130	2
Sugar Sweetened Beverages	29.9	0.6	52	1	175	2
Fried/baked dough with Meat/Cheese/Vegetables (Salgados)	27.2	0.6	54	1	197	3
10-18 years						
Sweets & Desserts	43.7	1.2	131	8	299	16
Sugar Sweetened Beverages	35.0	1.1	64	3	182	4
Fried/baked dough with Meat/Cheese/Vegetables (Salgados)	33.7	1.2	66	3	194	5
Sweetened Coffee & Tea	29.3	1.2	31	2	107	3
Fruit	27.2	1.1	36	2	132	4
19-39 years						
Sweetened Coffee & Tea	44.0	1.0	42	1	95	2
Sugar Sweetened Beverages	35.2	0.9	64	2	181	3
Sweets & Desserts	30.8	0.9	84	3	271	9
Fruit	28.9	0.8	38	1	131	3
Fried/baked dough with Meat/Cheese/Vegetables (Salgados)	27.8	0.8	57	2	206	4
40-59 years						
Sweetened Coffee & Tea	57.7	1.0	51	2	88	2
Fruit	32.8	1.0	42	2	128	3
Sweets & Desserts	26.3	0.9	63	3	241	10
Breads	24.0	0.9	41	2	173	5

Food groups	Percent consuming ¹		Energy from snack food			
	%	SE	Per Capita	Per Consumer	SE	SE
Sugar Sweetened Beverages	23.7	1.0	38	2	162	4
60 years						
Sweetened Coffee & Tea	55.3	1.6	45	2	82	3
Fruit	40.1	1.6	53	3	132	4
Fried/baked dough with Meat/Cheese/Vegetables (Salgados)	26.5	1.4	47	3	179	6
Sweets & Desserts	25.0	1.3	51	4	205	10
Breads	22.3	1.3	33	2	150	5

¹ Top 5 foods are identified according to the percent of persons consuming, defined as per² below. Detailed information about the food groups is available upon request.

² Percent of persons consuming the snack foods *during* a snacking event.

³ Per consumer (among snackers) percent of daily energy from snacks contributed by each of the five food groups.