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Place and type of meals consumed by adults in medium sized cities

ABSTRACT

OBJECTIVE: To describe the meals consumed by adults living in a midsize city in the South of Brazil, according to the place and preparation.

METHODS: A population-based cross-sectional study was conducted in Pelotas, Southern Brazil, in 2012. The two-stage sampling design used the 2010 census tracts as primary sampling units. Data were collected on the place of meals (at home or out) and on the kind of preparations consumed at home (homemade, snacks, take away food) covering the two days prior to the interview, using a standardized questionnaire.

RESULTS: The study included 2,927 adults, of which 59.0% were female, 60.0% were below 50 years of age and 58.0% were in work. Data were collected on 11,581 meals consumed on the two days preceding the interview, 25.0% were consumed outside of the home at lunchtime, and 10.0% at dinnertime. Considering home meals, most participants reported eating food prepared at home at both lunch and dinner. The majority of out-of-home meals (64.0% for lunch and 61.0% for dinner) were consumed in the work place, mostly based on food prepared at home. Individuals eating out of home were mostly male, young and highly educated. The occupational categories that ate at restaurants more often were trade workers, businessmen, teachers and graduate professionals.

CONCLUSIONS: Despite the changes in eating patterns described in Brazil in recent years, residents of medium-sized towns still mostly eat at home, consuming homemade food.

DESCRIPTORS: Food Habits. Food Consumption. Feeding Behaviour. Population Surveys. Cross-Sectional Studies.

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Received: 1/29/2013
Approved: 9/20/2013

Article available from: www.scielo.br/rsp

INTRODUCTION

Changes to the population's lifestyle, due to globalization and urbanization have led to changes in eating patterns and behavior.^{6-8,13,14} Lack of time to prepare and eat food has stimulated the food industry to develop new techniques for conserving and preparing food, providing a greater variety of ready to eat options.^{7,8,11} Moreover, certain foods have become globalized, having been introduced into different cultural and economic contexts.^{8,11,12}

In Brazil, in recent decades, changes have been observed in individual's eating habits; not only has intake of ultra-processed foods increased,¹¹ but also the locations in which meals are eaten and the types of food eaten has changed.

In the United States, spending on eating out, in relation to total food spending, increased from 26.0% in 1970, to 39.0% in 1996, and reached 42.0% in 2002.^a In Brazil, comparing data from the Household Budget Surveys (POF) from 2003-2003 and 2008-2009, we can see that the increase in mean monthly spending on eating out increased (from 24.1% to 31.1%),^b especially in fast food restaurants, the number of which also increased, adapting to this demand.^{4,5}

The aim of this study was to describe meals eaten by adults regarding the place and type of food consumed in a medium sized city in the South of Brazil.

METHODS

This was a descriptive population-based cross-sectional study conducted in the city of Pelotas, in the South of Brazil, between February and June 2012. This study is part of an academic study on the health of the population of Pelotas, called the research consortium.² The sampling design involved two stages, using census tracts from the 2010 Demographic Census^c as the primary sample unit. The tracts were selected with probability proportional to their size, after being sorted according to geographic location. Within each tract, a fixed number of residences was selected, producing a self-weighted sample.

To estimate the sample size, in the absence of local information, a prevalence of 50.0% of meals eaten out was considered, maximizing the total sample size. A 95% confidence level was used, with acceptable error of three percentage points. The result obtained was increased by 10.0% to allow for losses and refusals,

and by another 50.0%, to take into account a design effect of 1.5. The minimum necessary sample was estimated to be 1,759 adults. Given that the study had other objectives that required more individuals, the final study sample included 3,120 adults.

The meals – lunch and dinner – consumed by the interviewees in the two days preceding the interview were studied in relation to two aspects: (1) the place where they were consumed (at home, pay-by-weight restaurant, *a la carte* restaurant, snack bar/pizzeria or workplace); and (2) type of food consumed. The types were pre-coded, which limited the response options. For meals eaten at home, the types of food recorded were: homemade meals, homemade snacks, frozen meals, take-away meals and snacks. For meals consumed outside of the home, information was collected on the type of restaurant or place, assuming that in these cases the place would also define the type of meal consumed: pay-by-weight restaurant, *a la carte* restaurant, fast food restaurant, pizzeria, workplace or other.

Due to the limitation in the number of questions imposed by the research consortium, the type of preparation consumed in the workplace was investigated in a subsample, interviewed by telephone. This subsample was selected systematically for each occupational category. Ten individuals were selected for each category, with the exception of the teachers, where only nine individuals responded that they had eaten at work or another place outside of the home in the two days preceding the interview. In total, there were 89 telephone interviews. Each individual was asked whether they had brought food from home to work, otherwise, where and what kind of food they had eaten.

The demographic and socioeconomic variables studied were: sex, age, schooling, economic level according to the National Economic Indicator (IEN),¹ based on household assets and head of household schooling. Occupation was classified based on the Brazilian Occupation Classification (CBO),^d totaling nine categories: (1) out of work; (2) domestic employment, including maid, janitor, cook, butler, nanny, security, gardener, housekeeper; (3) general work or cleaner in a company; (4) technical, services, trade: civil servants, drivers, supervisors, freelance; (5) businessmen, shop owners: managers, small business, executives, directors; (6) industrial services, construction, truck loading and unloading, locksmith, factory workers, mason, painter, electrician, joiner, welder, carpenter;

^a Lin B-H, Frazão E, Guthrie J. Away-from-home foods increasingly important to quality of American diet. *Agric Inform Bull* (Washington DC). 1999;(749):1-22.

^b Instituto Brasileiro de Geografia e Estatística. Pesquisa de orçamentos familiares 2008-2009: despesas, rendimentos e condições de vida. Rio de Janeiro: IBGE; 2010.

^c Instituto Brasileiro de Geografia e Estatística. Censo demográfico 2010: famílias e domicílios, resultados da amostra. Rio de Janeiro: IBGE; 2012.

^d Ministério do Trabalho e Emprego. Classificação Brasileira de Ocupações: estrutura, tábua de conversão e índice de títulos. Brasília (DF); 2002.

(7) higher education professionals: nutritionists, lawyers, agronomists, psychologists, physicians, and other; (8) teachers and education professionals; (9) others: this category included less common occupations, such as members of the armed forces, police, and fire department.

The data collection was carried out by 30 trained interviewers. Training lasted 40 hours and included carrying out a pilot study in a census tract not selected for the study sample.

Quality control was conducted in 10.0% of the sample, through a second interview, based on a subset of the original questions. The question relating to this study was: "Is there a day of the week on which you usually eat out for lunch?"

The analyses, performed using Stata version 12.1, always took into account the sample design. The sample was described, presenting absolute and relative frequencies of the socioeconomic and demographic characteristics. The percentage of meals eaten out of home on the two days preceding the interview was estimated for lunch and dinner, stratified by the independent variables analyzed. Fisher's exact test was used to test for differences between the groups regarding the proportion of meals which were eaten out, adopting a 5% level of significance.

Based on the subsample of individuals interviewed by telephone, we estimated the total percentage of meals which were prepared at home and brought to work. As a fixed number of individuals were interviewed in each occupational category, each group was weighted when a global estimate was calculated, yielding a representative value for the population.

The study was approved by the Ethics Committee of the Faculty of Medicine, *Universidade Federal de Pelotas* (OF.77/11). All the interviews took place at the subject's home, after the informed consent form had been signed.

RESULTS

In total, 3,120 eligible adults were identified for the study and 2,927 were successfully interviewed. Losses and refusals were 9.3% of the eligible sample. For the question used in the quality control interviews, a Kappa coefficient of 0.73 ($p < 0.001$) was found.

Table 1 shows the characteristics of the sample, of which 58.9% were female, 59.7% were aged under 50 and 63.7% had more than eight years of schooling. Regarding occupation, 42.2% were not in work, a group which included students and pensioners, as well as the unemployed. The most common occupational group was that composed of technical, services and commerce

Table 1. Socioeconomic and demographic characteristics of the sample. Pelotas, RS, Southern Brazil, 2012. (N = 2,927)

Variable	n	%
Sex		
Male	1,203	41.1
Female	1,724	58.9
Age (years)		
20 to 29	612	20.9
30 to 39	540	18.5
40 to 49	595	20.3
50 to 59	514	17.5
60 to 69	386	13.2
70 to 79	202	6.9
80 or over	78	2.7
Schooling (years)		
< 4	316	10.8
4 to 7	747	25.5
8 to 11	1,099	37.6
12 or more	762	26.1
Economic level ^a (quintiles)		
1 (poorest)	587	20.2
2	551	19.0
3	591	20.3
4	595	20.5
5 (richest)	581	20.0
Occupation		
Not in work	1,234	42.2
Domestic worker	150	5.1
General services	95	3.3
Technical, service, commercial worker	779	26.6
Businessmen, trader	105	3.6
Industrial services, civil construction	227	7.8
Higher level professionals	162	5.5
Teacher, education	118	4.0
Other	56	1.9

^a National Economic Indicator, based on consumer goods.¹

workers (26.6%), which covered a wide variety of functions. Next came the groups of industrial services and construction (7.8%), higher level professionals (5.5%) and domestic employees (5.1%).

Each individual was asked about their meals – lunch and dinner – consumed on the two days preceding the interview. Information was obtained on 11,581 meals, with 25.0% and 9.7% of lunches and dinners consumed outside of the home, respectively (Table 2). Men, individuals aged 20 to 29 years, those with 12 or more years of education, as well as domestic employees were those who most frequently ate lunch outside of the home. Concerning dinner, the profile was similar, except for

Table 2. Number and percentage of meals eaten outside of the home on the two days preceding the interview. Pelotas, RS, Southern Brazil, 2012. (N = 11,581)

Variable	Meals outside of the home			
	Lunch (N = 5,819)		Dinner (N = 5,762)	
	n	%	n	%
Total	1,453	25.0	557	9.7
Sex		p = 0.002		p = 0.001
Male	664	27.8	272	11.5
Female	789	23.0	285	8.4
Age (years)		p < 0.001		p < 0.001
20 to 29	408	33.5	204	16.9
30 to 39	331	30.8	110	10.3
40 to 49	311	26.4	112	9.5
50 to 59	245	23.9	79	7.8
60 to 69	108	14.0	39	5.1
70 to 79	36	8.9	12	3.0
80 or more	14	9.0	1	0.6
Schooling (years)		p < 0.001		p < 0.001
< 4	80	12.7	30	4.8
4 to 7	344	23.0	105	7.1
8 to 11	546	25.0	217	10.0
12 or more	483	31.8	205	13.6
Economic level ^a (quintiles)		p = 0.021		p = 0.233
1 (poorest)	240	20.5	113	9.7
2	296	27.0	80	7.4
3	337	28.7	118	10.2
4	298	25.2	123	10.6
5 (richest)	269	23.3	121	10.6
Occupation		p < 0.001		p < 0.001
Not in work	272	11.0	139	5.7
Domestic worker	144	48.2	30	10.1
General services	68	36.6	16	8.7
Technical, service, commercial worker	507	35.8	203	13.2
Businessmen, trader	74	35.7	30	14.5
Industrial services, civil construction	169	37.4	33	7.4
Higher level professionals	106	33.0	53	16.5
Teacher	78	33.2	32	13.7
Other	35	31.5	20	17.8
Day of the week		p = 0.657		p = 0.020
Monday to Friday	1,084	25.2	385	9.0
Saturday and Sunday	369	24.4	172	11.5

^a National Economic Indicator, based on consumer goods.¹

occupation. Higher level professionals as well as those in other occupations, had the highest percentage of dining outside of the home. Meals consumed outside of the home during working days were mostly at lunchtime (25.2%). On Saturdays and Sundays, dining out was more frequent (11.5%).

The Figure characterizes meals eaten at home and eaten out, according to occupation groups. Eating lunch at home was most common in all groups, with the highest proportion for those who did not work. Groups of domestic employees, general services and industrial services had the highest frequency of eating lunch at

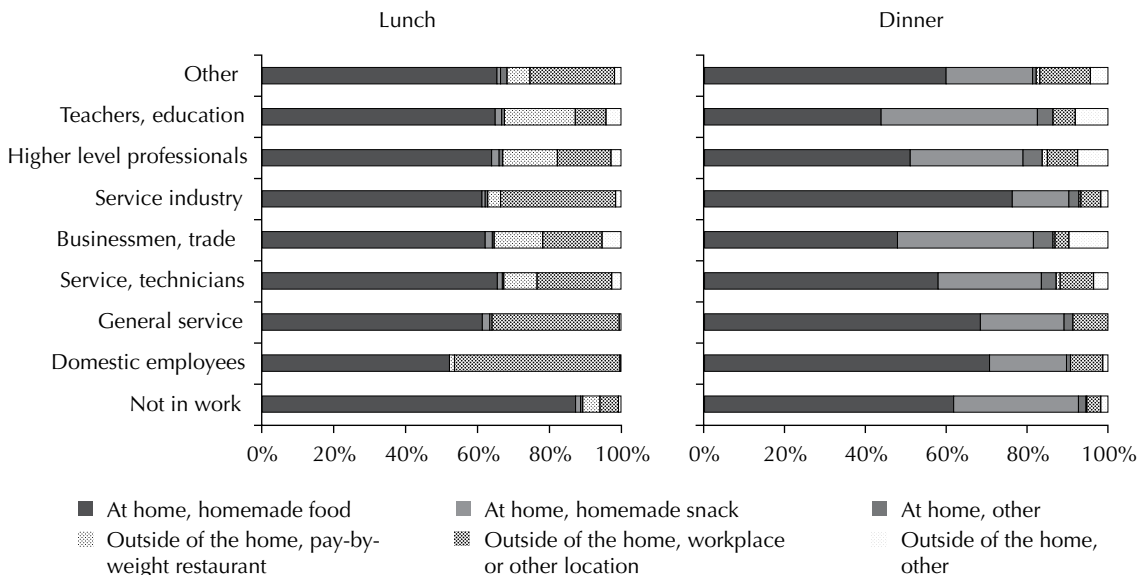


Figure. Location and type of meal according to occupation. Pelotas, RS, Southern Brazil, 2012. (lunch: N = 5,791; dinner: N = 5,699)

work or in another place. Teachers, higher level professionals and business men or commerce workers, on the other hand, had the highest percentages of eating in pay-by-weight restaurants. Concerning dinner, there was a large predominance, in all categories, of eating at home, with a greater share of snacks prepared at home, compared with lunchtime.

Table 3 shows the type of food consumed at home, and where meals outside of the home were made. Meals eaten at home were most frequently prepared at home, both for lunch (95.6%) and for dinner (66.5% homemade meals and 30.1% of homemade snacks). The majority of meals eaten out of home were in the workplace or in a place referred to as “other” in the questionnaire – both at lunchtime (64.3%) and dinnertime (61.1%). The second most common place was pay-by-weight restaurants at lunchtime (28.8%) and fast food restaurants or pizzerias for dinner (23.6%).

The majority of the individuals interviewed by telephone who had reported a meal in the workplace said that they had consumed food brought from home. The exception was the occupational group labeled as “other”, including mostly armed forces and police members, who reported eating lunch in a refectory. The proportion of individuals bringing food from home varied from 70.0% in the businessmen group to 100% in the group of domestic, general or industrial service workers. The mean proportion for all occupational groups was 91.0% of meals based on food brought from home (data not shown).

Using this estimate of 91.0% of food consumed in the workplace being homemade, it was possible to evaluate the total percentage of meals reported in which homemade food was consumed. For meals eaten at home, 96.5% of them were based on homemade food. In meals eaten outside of the home, 55.9% of them were of homemade food. Overall, homemade food was the base of 89.4% of the meals.

Table 3. Type of homemade meals and place of meals eaten outside of the home. Pelotas, RS, Southern Brazil, 2012.

Meal	Type of food consumed at home											
	Homemade food		Homemade snack		Tupperware		Frozen meal		Bought snack		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Lunch	4,166	95.6	80	1.8	81	1.9	18	0.4	13	0.3	4,358	100.0
Dinner	3,432	66.5	1,556	30.1	23	0.5	27	0.5	126	2.4	5,164	100.0
Meal	Place of meals consumed outside of the home											
	Pay-by-weight restaurant		A la carte restaurant		Snack bar or pizzeria		Workplace or other		Total			
	n	%	n	%	n	%	n	%	n	%		
Lunch	413	28.8	68	4.7	31	2.2	921	64.3	1,433	100.0		
Dinner	29	5.4	53	9.9	127	23.6	328	61.1	537	100.0		

DISCUSSION

This population based study, conducted in a medium sized city in the South of Brazil, identified high percentages of meals eaten at home, with the majority of meals eaten being homemade. Meals eaten outside of the home were predominantly consumed at work, or in pay-by-weight restaurants. No differences were observed regarding the day of the week, although there were differences according to occupation.

The results contradict the general perception that in everyday life in Brazil a significant share of food consumed is fast food and is eaten outside of the home. This study, in a medium sized city, reflects a reality which probably differs from that of state capitals or large cities. In the situation studied, it was easier to eat at home due to shorter travelling times. Moreover, the reports indicated a lack of cafeterias in companies.

Studies in developed countries which approach the consumption of meals outside of the home, such as those of Guthrie⁹ and Kant,¹⁰ have shown that, since the 1970s, eating patterns have been characterized by decreasing consumption of homemade food and an increase in meals eaten out. A study in Belgium found that 35.0% of individuals consumed at least 25.0% of their daily calorie intake outside the home.¹⁴

Brazilian studies have also shown high percentages of food eaten outside of the home, around 40.0%^e with a positive association between eating out and being overweight.⁴

However, it was observed that only 16.0% of total energy intake came from food outside of the home. This may be explained by the type of food consumed, with only 28.0% of meals eaten in restaurants, regardless of the type of meal consumed – fast food, pay-by-weight or other.³

In this study, it was observed that around 90.0% of meals reported in the two days preceding the interview were based on homemade food. This finding is in contrast to the prevailing opinion in the literature, that increased spending on ready to eat meals and eating out means that there is a high consumption of ready to eat or industrialized food in Brazil. It cannot be denied that the importance of this type of food has increased, but increased spending does not imply (not used in this case) consumption of primarily this type of food. Moreover, in Brazil, the price of ready to eat food, especially industrialized food, is very high, which restricts its use by the majority of the population, although from the point of view of spending, the percentage is much higher than its percentage of food intake. This study concerns adults and the questions were applied individually, meaning that individual consumption was identified, rather than household, as is the case in food spending studies. In the context of the

study, a medium sized city in the interior, homemade food predominated in individual's food intake.

Even in the United States, where fatty foods and ready meals are commonly adopted, studies of eating out trends show that the mean number of meals eaten out per week went from 2.5 to 2.8 between 1987 and 2000, and that the percentage of individuals who ate out six or more times went from 12.0% to 15.0% in the same period.¹⁰ Based on this information, it can be concluded that a large part of meals in the United States are also consumed at home, although there is no data on the type of food consumed.

Some limitations need to be considered when interpreting the results of this study. One concerns the fact that meals consumed in the workplace were not investigated. This information was obtained later, from a subsample. Even so, the panorama which presented itself was unmistakable. Choosing to examine the two days preceding the interview optimized the capacity to remember exactly what was consumed, but it has some drawbacks. First, the fact that the two days are consecutive, in the majority of cases, including two working days. Second, Friday and Saturday were underrepresented, as a low number of interviews were conducted on Sundays. Moreover, verifying the foods consumed individually on the two preceding days does not explain the consumption of meals, but when verified for groups of individuals, it allows the meals consumed in a typical week to be characterized.

In order to correctly interpret our results one needs to bear in mind that only the main meals (lunch and dinner) were investigated. We did not gather information about snacks, tidbits or other foods consumed between main meals. The approach differs from most of the available literature based on national surveys that focus on food groups and energy content.^{3,4}

We also sought to evaluate in more detail the differences per occupational category, as this is important for drawing up health policies. We verified that there were significant differences and that the group of domestic, industrial and civil construction and general services workers – those who are least specialized – are those who most commonly eat homemade food. More specialized groups and those who work in commercial services, on the other hand, make most frequent use of pay-by-weight restaurants.

This set of data should serve to guide new, more in-depth studies of this panorama and to prevent policies on obesity and food guidance from neglecting the domestic environment and homemade food. It is in this context that the vast majority of meals eaten by adults are prepared.

^e Instituto Brasileiro de Geografia e Estatística. Pesquisa de orçamentos familiares 2008-2009: análise do consumo alimentar pessoal no Brasil. Rio de Janeiro: IBGE; 2011.

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This study was supported by the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES – Master’s grant – PROEX 337/2010).

Article based on the master’s thesis of Carús JP, entitled: “*Caracterização de refeições realizadas em casa e fora de casa por adultos*”, presented to the *Programa de Pós-Graduação em Epidemiologia* of the *Universidade Federal de Pelotas*, in 2013. The authors declare that there are no conflicts of interest.