

A Cross-Cultural Comparison of Eating Behaviors and Home Food Environmental Factors in Adolescents From São Paulo (Brazil) and Saint Paul–Minneapolis (US)

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ABSTRACT

Objective: Describe cross-cultural differences in nutrition-related factors among adolescents from São Paulo, Brazil and St Paul–Minneapolis, US.

Design: Two large-population-based studies with cross-cultural comparisons.

Setting: Twelve São Paulo and 10 St Paul–Minneapolis high schools in 2009–2010.

Participants: A total of 1,148 adolescents from São Paulo and 1,632 adolescents from St Paul–Minneapolis.

Main Outcome Measure(s): Meal consumption, family meals, fast-food consumption, and home food availability.

Analysis: Binomial regressions, weighted for age distributions and adjusted for gender, were used to compare identical measures from each sample.

Results: Generally, São Paulo adolescents reported healthier nutritional outcomes than St Paul–Minneapolis adolescents. São Paulo adolescents were 7 times less likely to report high fast-food consumption than St Paul–Minneapolis adolescents ($P < .001$). Whereas most measures of the home environment indicated healthier home environments in São Paulo, more São Paulo adolescents reported that sugar-sweetened beverages were usually available at home than did St Paul–Minneapolis adolescents ($P < .001$).

Conclusions and Implications: São Paulo youth tended to have healthier eating behaviors and home food environment factors than St Paul–Minneapolis youth. Brazilian eating patterns tend to be healthier and support a connection with food and culture. Interventions are needed to encourage youth and their families to maintain these patterns.

Key Words: cultural comparison, food pattern, adolescents, meal, sugar-sweetened beverage, Brazil (*J Nutr Educ Behav.* 2014;46:370-375.)

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INTRODUCTION

In Brazil, as in other countries within Latin America, nutritional transitions have been observed, resulting in an emergence of overnutrition and increased risk for childhood overweight/obesity.¹ National data indicate

that the prevalence of overweight status among Brazilian youth has tripled in girls and has increased 6-fold in boys during the 30-year period from 1975 to 2002.² Secular trends show that the traditional diets in Brazil, characterized by rice and beans, have been rapidly replaced by industrialized

foods, which are rich in sugar, salt, fat, and empty calories.¹⁻⁹

Worldwide, adolescents generally report low consumption of fruits and vegetables, skipping meals, consuming a large portion of their diet from fast-food restaurants, and not having family meals.¹⁰⁻¹³ Research has indicated that the home food environment may contribute to adolescent eating behaviors.⁹ Little is known about eating behaviors and the home food environment among Brazilian youth, and how these compare to those of US youth, who are exposed to a more “advanced” stage of the nutrition transition.¹⁴⁻²¹ Identifying similarities and differences across these 2 distinct cultures can help in understanding the types of factors that may influence current eating patterns and health outcomes

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of Brazilian youth, and inform the development of interventions to prevent a progression to problems prevalent among US youth. For example, differences across countries may suggest the importance of local influences (eg, local food availability, cultural patterns), whereas similarities may suggest more global influences (eg, media, fast-food chains).¹⁵⁻²¹ Thus, the purpose of this article is to describe similarities and differences in eating behaviors and home food environmental factors in 2 large metropolitan samples of adolescents living in São Paulo, Brazil and St Paul–Minneapolis, US. It was hypothesized that adolescents from São Paulo would, in general, have healthier behaviors and a healthier home food environment, such as reporting lower consumption and home availability of unhealthy foods, less meal skipping, and higher frequency of family meals.

METHODS

Study Design and Population

Project Eating and Activity in Teens (EAT) was designed to examine nutrition, physical activity, and weight-related factors in a population-based sample of adolescents in St Paul–Minneapolis, Minnesota. Project EAT incorporates a repeated-cross sectional design; previous waves of the study informed the items used the survey completed in 2009–2010.^{22,23} Similarly, the São Paulo study was developed to assess eating and weight-related attitudes and behaviors among adolescents in Brazil and mirrored the study design of an earlier version of the Project EAT survey.^{12,13,23,24} Thus, many of the items across the 2 studies were identical, allowing cross-cultural comparisons.

The Project EAT survey was guided by a theoretical framework that integrated aspects of social cognitive theory and an ecological perspective,²⁵⁻²⁷ expert review, qualitative work with adolescents,²⁸ a review of previous surveys, and extensive pilot testing with adolescents. The measures included in Project EAT have strong psychometrics and test-retest reliability. For the São Paulo-based study, the 1998–1999 version of the Project EAT student survey was translated into Portuguese by the research team and back-translated

into English by a dietitian fluent in the English language, who had no previous contact with the survey. Only measures used in both the St Paul–Minneapolis-based and São Paulo-based survey were included in the current analyses (English versions of the survey items are reported here). The Brazilian version of the survey was developed in 2009–2010 and was based on the first wave of Project EAT, and a pilot test took place in a public school (not included in the final sample) before the data collection in March, 2009, to test adolescents' understanding of the items.

São Paulo-based sample. A cross-sectional study was conducted in 2009–2010 in 12 technical schools in São Paulo. In Brazil, a technical school provides the same curriculum as the regular public schools; however, students have more options in the courses they take. Students can select their electives from fields such as business, agriculture, chemistry, engineering, computer science, and nutrition. After 3 years (graduation), students are able to work in these fields. The study sample included 1,167 adolescents, ages 14–19 years. Participants missing their date of birth were excluded ($n = 19$); thus, the São Paulo analytical sample included 1,148 adolescents (49% female; mean age, 16.5 ± 1.0 years). All participating adolescents provided parental signed consent forms approved by the University of São Paulo School of Public Health Ethical Committee.

Saint Paul–Minneapolis-based sample. Surveys were completed during the 2009–2010 school year by adolescents from 20 public middle schools and high schools in the St Paul–Minneapolis metropolitan area of Minnesota, which serve socioeconomically and racially/ethnically diverse communities. The current analysis includes adolescents aged 14–19 years ($n = 1,632$), to allow for the comparison of similarly aged youth in both countries. The sample was limited to 10 schools. Participants in the analytic sample were equally divided by gender (53% female) and had a mean age of 16.2 ± 1.2 years. Parental consent for study participation was received by each student under 18 years of age at

least 10 days before data collection. All participating students provided assent. The University of Minnesota's Institutional Review Board Human Subjects Committee and the school districts' research boards approved all study protocols for the St Paul–Minneapolis-based sample.

Measures

Eating behaviors. Frequency of meal consumption was assessed through the question: "During the past week, how many days did you eat breakfast/lunch/dinner?" (Response options were: "never," "1–2 days," "3–4 days," "5–6 days," and "every day."). Frequency of family meals was assessed with the question: "During the past 7 days, how many times did all, or most, of your family living in your house eat a meal together?" Students selected 1 of 5 response options ranging from "never" to "every day." Items that assessed meals and family meals were trichotomized to "never" (0 times/wk), "irregular" (1–4 times/wk), and "regular" (≥ 5 times/wk) based on overall distribution. Frequency of fast food was assessed with the item: "In the past week, how often did you eat something from a fast-food restaurant?"²⁹ Participants chose from 1 of 6 responses, ranging from "never" to "> 7 times." Because of its distribution, fast-food frequency was trichotomized to "never" (0 times/wk), "low" (1–2 times/wk), and "high" (> 3 times/wk).

Home food availability. Home food availability was defined as the food and drink that was present in the household. Home food availability was assessed with several questions developed for previous waves of Project EAT.³⁰ Participants were asked to report healthy (fruit and vegetables, and fruit juice and milk served at meals) and unhealthy home food availability (chips and salty snacks, chocolate and candy, and sugar-sweetened beverages). For each of these items, participants were asked to report how often each item was available in their home: "never," "sometimes," "usually," or "always." Items that assessed home food availability were dichotomized to "never/sometimes" and "usually/always."

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