



Applied nutritional investigation

Psychosocial factors influencing the frequency of fast-food consumption among urban and rural Costa Rican adolescents

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ABSTRACT

Objective: The aim of this study was to identify psychosocial factors that influence fast-food consumption in urban and rural Costa Rican adolescents.

Methods: A self-administered questionnaire designed for the study asked about sociodemographic information, frequency of fast-food consumption, meaning of “fast food,” location of purchase, and psychosocial correlates. Five psychosocial factors were extracted by using principal components analysis with Varimax rotation method and eigenvalues. Descriptive statistics and a hierarchical linear regression model were used to predict the frequency of fast-food consumption.

Results: Responses from 400 adolescents (ages 12–17 y) reveal that daily consumption of fast food was 1.8 times more frequently mentioned by rural adolescents compared with urban youth. Urban and rural differences were found in the way adolescents classified fast foods (rural adolescents included more traditional foods like chips, sandwiches, and *Casado*—a dish consisting of rice, black beans, plantains, salad, and a meat), and in purchasing locations (rural adolescents identified neighborhood convenience stores as fast-food restaurants). Living in rural areas, convenience and availability of foods, and the presence of external loci of control were predictors of a higher frequency of fast-food consumption, whereas health awareness predicted a lower frequency.

Conclusions: The development of interventions to reduce fast-food consumption in Costa Rican adolescents should consider not only convenience, but also the availability of these foods where adolescents are more exposed, particularly in rural areas. Interventions such as improving the convenience of healthy fast foods available in school canteens and neighborhood stores, policies to increase the price of unhealthy fast food, and activities to provide adolescents with the skills to increase self-efficacy and reduce the effect of external loci of control are recommended.

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Introduction

Fast foods are foods sold in a restaurant or store, rapidly prepared and quickly served in a packaged form for takeout [1].

Monge-Rojas conceived and designed the study; collected, analyzed, and interpreted data; and drafted the manuscript. All authors contributed significantly to the interpretation and presentation of data and revisions of the manuscript. Specifically, Smith and Colón-Ramos contributed importantly to the analysis and interpretation of data. They also reviewed the draft, final and revised manuscripts. Aragón and Herrera-Raven made central contributions to reviewing the draft, final and revised manuscripts.

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Although causality between fast-food consumption and obesity has not been established, there is a clear positive association between fast-food consumption and energy intake, making individuals more prone to weight gain and obesity [2]. People who eat fast foods once per week have an additional 20% risk for developing coronary heart disease compared with those who never consume [3]. The risk increases to 50% for those who consume two or three times a week, and up to 80% for those who eat fast food more than three times a week. Fast-food consumption more than twice a week leads to a 27% increase in the risk for developing type 2 diabetes [3]. Based on this evidence, the World Health Organization has recommended minimum consumption of these foods [4].

Adolescence is a vulnerable period during which dietary habits are established that persist into adult life [5]. The proportion of adolescents who consume fast foods daily varies widely worldwide: Mexico, 13% [6]; Brazil, 20% [7]; Canada, 30% [8], and Australia, 89.9% [9]. In the United States, adolescents tend to visit fast-food restaurants at least twice a week [10], consuming more energy, fat, sugar and sugar-sweetened beverages, and less fiber, milk, fruits, and vegetables than their peers who do not visit fast-food restaurants [11]. Fast-food intake among adolescents has been associated with the availability of competitive foods in the school environment [12,13]; the proximity of fast-food restaurants to the physical environment surrounding the home and school [12,14]; peer influence on fast-food purchases [15,16]; peer social norms [12,16]; fast-food advertising and marketing [17]; fast-food taste [12,18] and costs [19]; fast-food purchases for family meals [20]; and the level of self-efficacy of parents and adolescents [21].

Understanding the effect of the social and psychological factors involved in the decision to eat fast foods is essential in guiding the implementation of health promotion and disease prevention programs among adolescents. This is especially important considering that the eating patterns of Costa Rican adolescents are not consistent with international healthy eating recommendations: Intakes of saturated and trans-fatty acids and sucrose are high, whereas intakes of some vitamins, minerals, fiber, fruits, and vegetables are notably low [22–25,27]. We have previously shown that urban adolescents have a significantly higher intake of saturated fatty acids, cholesterol, trans-fatty acids [22–24], and had a higher prevalence of overweight than rural adolescents [21,25,26], rural adolescents had a lower intake of ω -3 and ω -6 polyunsaturated fatty acids and micronutrients, as well as a higher intake of carbohydrates and fiber [22–25,27].

Given the increase in globalization and in the presence of fast-food chains in low- and middle-income countries, it is crucial to understand the extent of fast-food consumption and related factors among the vulnerable populations in these countries. The aim of this study was to identify fast-food consumption frequency and sociodemographic and psychosocial correlates among adolescents in Costa Rica.

Materials and methods

Study population

In 2011, a survey was conducted among adolescents (ages 12–17 y) from rural and urban schools in the area of San José, Costa Rica. The sample size was calculated using a 95% confidence interval and a permissible error of 5% (an additional 10% was added to cover possible non-response). Adolescents were recruited from 12 urban and 3 rural schools. Schools were selected at random using a probability proportional-size formula. Twenty-eight students were randomly selected from the seventh to eleventh grade in each school (about six students per grade). Consent forms were obtained from the students' parents, while the participating students provided their assent in compliance with the guidelines of the Bioethics Committee of the Costa Rican Institute for Research and Education on Nutrition and Health (INCIENSA).

Data collection tools

A three-section self-administered questionnaire was designed for the study. The first section of the questionnaire asked about sociodemographic information (age, gender, residential area) and ownership of goods (home ownership, access to utilities and ownership of household appliances such as Internet, cable TV, and microwave oven). Ownership of goods was used to determine socioeconomic status [28].

The second section included a multiple-answer question that was designed to obtain information about frequency of fast-food consumption in the past month, whereas another was designed to obtain the reliability of the reported frequency. Additionally, multiple-answer questions were developed to examine the meaning of fast food, and the locations of fast-food purchases, based on

a previously published instrument [29] adapted and tested with Costa Rican adolescents.

To explore the different psychosocial factors influencing fast-food consumption, 63 questions using a 7-point Likert Scale were created based on published literature and appeared in the third section [29]. The validity of this section was determined using factor analysis.

A nutritionist and a psychologist independently assessed the validity of the questionnaire to seek face validity. They used the cognitive forms appraisal method developed by Forsyth and Lessler [30]. Forsyth and Lessler developed a formal coding system to detect potential problems such as vague wording, complicated syntax, and difficult retrieval tasks. The appraisal system is based on the Four-Stage Model of the survey response process and is divided into the four major categories of comprehension, retrieval, judgment, and response generation.

Statistical analysis

Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS Inc., version 15.0 for Windows, Chicago, Ill).

The Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity [31] were used to examine the adequacy of data for factor analysis. A principal components analysis with Varimax rotation and eigenvalues > 1 was used for component extraction [31]. Cronbach's- α and item-total correlation were used to assess internal consistency.

The Student's *t* test for independent samples and Pearson χ^2 test were used to assess associations ($P < 0.05$ was considered significant). Standardized adjusted residual scores (SAR) also were used to complement the χ^2 statistic to identify the contribution of specific cells to the overall χ^2 in complex cross-tabulations (in our case, 2×9 tables). A level of SAR > 2 was considered significant as suggested by García-Pérez [32].

Pearson correlations were used to determine associations between the psychosocial factors extracted by principal component analyses, and variables including gender, age, and residential area, ownership of goods and frequency of fast-food consumption. A hierarchical linear regression modeled frequency of fast-food consumption as a function of sociodemographic variables and of the psychosocial factors. In the first step of the model, only sociodemographic variables (age, gender, area of residence and ownership of goods) were introduced, while in the second step, the factors extracted by principal component analyses were added. The "enter" method was used at each step of the regression method.

Results

After exclusion of 20 individuals, we report information on 400 adolescents (mean age: 15.2 ± 1.5 y) (Table 1). The majority (80%–85%) of our sample stated that their responses reflected their usual frequency of fast-food consumption (data not shown).

Factor analysis

The Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity yielded a value of 0.63 and $\chi^2 = 4767.924$, $P < 0.001$, respectively, indicating acceptable adequacy of the sample for factor-analytical procedures. Factor analyses revealed five factors that explained 30.3% of the cumulative variance.

Table 1
General characteristics of the study sample (N = 400)

Characteristics	Percentage
Age groups (y)	
12–13	32.8
14–15	33.5
16–17	33.7
Gender	
Male	44.0
Female	56.0
Residential area	
Urban	61.2
Rural	38.8
School type	
Public	85.8
Private	14.2

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