

Original article

Food consumption frequency and excess body weight in adolescents in the context of financial crisis in Barcelona (Spain)

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ABSTRACT

Objectives: To describe food consumption frequency in adolescents in the context of the financial crisis in 2012, and to analyse potential fluctuations in excess body weight between 2008 and 2012.

Method: A cross-sectional study of eating habits and excess body weight was conducted in adolescents aged 13 to 19 years old from public, subsidised and private secondary schools in Barcelona, Spain. The FRESC lifestyle risk factors survey was used, and food frequency consumption, food recommendations and body mass index were analysed according to gender, year of education and socioeconomic status.

Results: Girls ate vegetables and fruits more frequently than boys, while the prevalence of junk food consumption was higher in boys. The prevalence of compliance with food recommendations was lower than 50% for all foods, and gender and socioeconomic differences were found for eggs, red meat and soft drinks. Regarding excess body weight, boys had a higher prevalence than girls in the 2 years analysed. Furthermore, a reduction in excess body weight was observed among girls in secondary education in the highest socioeconomic groups (28.7% [95% CI: 24.8–32.6%] in 2008 to 20.5% [95% CI: 17.1–23.8%] in 2012). **Conclusions:** The prevalence of adolescents following food recommendations is low, and gender differences were found in terms of food consumption frequency, even in the context of financial crisis. There is a need to promote programmes and policies to reduce inequalities related to eating habits and excess body weight in adolescents.

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Frecuencias de consumo de alimentos y exceso de peso en adolescentes en un contexto de crisis económica en Barcelona (España)

RESUMEN

Objetivos: Describir la frecuencia de consumo de alimentos en adolescentes en un contexto de crisis económica en el año 2012, y analizar los potenciales cambios en el exceso de peso entre los años 2008 y 2012.

Diseño: Estudio transversal de los hábitos alimentarios y el exceso de peso en adolescentes de entre 13 y 19 años de edad pertenecientes a escuelas públicas, concertadas y privadas de Barcelona. Se utilizó la encuesta FRESC sobre factores de riesgo asociados a estilos de vida y se analizaron, según sexo, curso académico y nivel socioeconómico, las frecuencias de consumo, recomendaciones alimentarias e índice de masa corporal.

Resultados: Las chicas realizaban un mayor consumo de frutas y verduras, mientras que los chicos consumían comida no saludable con mayor frecuencia. La prevalencia de cumplimiento de las recomendaciones alimentarias es inferior al 50% para todos los alimentos, y se encontraron diferencias según el sexo y el nivel socioeconómico en el consumo de huevos, carne roja y refrescos. En relación al exceso de peso, la prevalencia fue mayor en los chicos que en las chicas en los 2 años analizados. Además, se observó una reducción del exceso de peso en las chicas cursando Educación Secundaria Obligatoria y de nivel socioeconómico alto (de 28,7% [IC95%: 24,8–32,6%] en 2008 a 20,5% [IC95%: 17,1–23,8%] en 2012). **Conclusiones:** La prevalencia de adolescentes que siguen las recomendaciones de consumo es baja. Hay diferencias de sexo en las frecuencias de consumo de los alimentos, incluso en un contexto de crisis económica. Existe una necesidad de promover programas y políticas para reducir las desigualdades relacionadas con los hábitos alimentarios y el exceso de peso en los adolescentes.

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Palabras clave:

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Introduction

Excess weight (overweight and obesity) in adolescents is a major concern in Spain due to the high prevalences of overweight and obesity at 17% and 8.5% respectively in 2012.¹ Moreover, adolescents with excess weight are more likely to be overweight or obese in adulthood² and to have a higher risk of cardiovascular diseases³ which are one of the main causes of death in Spain.⁴ Excess weight is influenced by multiple factors, with eating habits playing a key role.

The “food recommendation pyramid” graphically represents the recommended frequency of food consumption according to their properties.⁵ In general, a healthy diet should include daily consumption of cereals or potatoes, vegetables, fruits and dairy products; meat, fish and eggs a few times per week; and sausages, sweets and manufactured products only occasionally.⁵ Eating habits are especially important during adolescence due to the physical and mental development that takes place at this period of life.⁶ Moreover, in adolescence, some lifestyles can be established and last until later stages, and therefore the acquisition of healthy habits, including eating habits, is especially important.⁷

The Spanish population has been experiencing an economic crisis since the third trimester of 2008. It is known that economic recessions can modify eating habits and,^{8,9} despite the lack of scientific published data, the available information from some organizations and non-governmental organizations show that there might be increasing food insecurity.¹⁰⁻¹² The Sociologic Investigation Center of Spain and UNICEF reported that eating habits in families might be changing, especially by reducing fresh food consumption, due to families’ limited economic resources.^{10,12} The *Sindic de Greuges*, a public organization that defends the fundamental rights of the Catalan population, warned that 2,800 children in Catalonia could have food security problems, and around 50,000 might have insufficient protein intake.¹¹

Published studies on food consumption frequency in adolescents in Spain are limited,^{13,14} or focus on other eating behaviours.^{15,16} Since 1987 a lifestyle risk-factor survey (FRESC) has been administered periodically to the adolescent population in Barcelona. The main objectives of this study were to describe eating habits in terms of food consumption frequency and compliance with food recommendations among adolescents in 2012 (in an economic crisis setting), and to analyse changes in the prevalence of excess weight as a health indicator between 2008 (before the economic crisis) and 2012.

Methods

A cross-sectional study based on two representative samples of students from Barcelona was carried out using the 2008 and 2012 FRESC surveys (lifestyle risk-factor survey for secondary school students [FRESC]). Both surveys were administered to adolescents enrolled in the 8th year of education (13-14 years old), 10th year (15-16 years old) and 12th year (17-18 years old) in secondary schools in the city of Barcelona, Spain.^{17,18}

Samples were obtained following the same procedure in each edition of the survey. The sample size was calculated to obtain a 3% precision and assuming 95% confidence for a proportion of 0.5. The sample assessed for each year of education and edition was 1,250 adolescents, taking into account a 20% loss. Classrooms were used as the sample unit and were randomly selected for each year, stratifying by the family economic capacity index (low, medium and high –FECI-96 –) and type of school (state, subsidized or private).

The FRESC questionnaire includes sociodemographic information and questions on different health risk factors, such as addictive substances, physical activity, emotional relationships, and food consumption frequency. The questionnaire was anonymous and was administered, with the prior permission of the schools’ headmasters, by professionals from the Public Health Agency of Barcelona (ASPB, *Agència de Salut Pública de Barcelona*) between the first and second trimester of the year. In 2008 and 2012 editions, students’ weight and height were objectively measured with their prior consent at the end of the questionnaire by the same professionals.

Principals and teachers of selected schools were properly informed about the objectives of the study. Furthermore, they gave their verbal informed consent and arranged a meeting with trained personnel of the ASPB and students for the administration of the questionnaire during regular school hours at classrooms. Students were also informed about the study and that their participation was absolutely voluntary, being free of not answering any question they did not consider appropriate. Students were also guaranteed that their responses were anonymous and would not be treated individually in any case. They were told not to write down their names or other personal identifiers in the questionnaire to assure anonymity. The study was approved by the Research Committee of the ASPB and parental informed consent was not considered necessary given the nature of the questionnaire.

Food consumption frequency was described using the food frequency questionnaire included in the 2012 FRESC survey, which provided data from a context of economic crisis. It was studied in terms of “food consumption frequency” and “compliance with the food recommendations”. Food consumption questions included the following items: bread, rice and pasta, potato or yucca, cereals, raw vegetables, boiled vegetables, fruits, legumes, meat (white and red), sausage, fish, eggs, dairies, nuts, pastries, sweets, milk desserts, crisps, and soft drinks. The response options differed, depending on the food, and ranged from “never or less than once a month” to “at least once a day”. Food consumption frequency was analysed by categorizing the food questions of the survey into “never”, “weekly” and “daily”. “Never” included the answers “never or less than once a month”; “weekly” included between “1 and 3 times a month” and “4 and 6 times a week”; and “daily” included between “once a day” and “3 or more times a day”. Compliance with food recommendations was analysed according to the “food recommendation pyramid”.⁵ The food answers from the questionnaire which contained the recommended frequency were classified as the “recommended” category for each food. The other categories were classified in “more than recommended” when the frequency was higher than recommended and “less than recommended” when the frequency was lower than recommended when possible. Since the recommendations for bread, rice and pasta, potato or yucca and cereals is for the entire group together, a variable called “carbohydrate” was created by pooling them together. The same was done for the variable “fruit and vegetables”, which included cooked and raw vegetables and fruits. “Junk food” included crisps, milk desserts, sweets and pastries.

Body mass index (BMI) information was extracted from the 2008 (before the economic crisis) and 2012 FRESC surveys. Weight and height were used to calculate the adolescents’ Quetelet index or BMI. The variable created weight status was defined using the age- and sex-specific cut-offs proposed by the World Health Organisation Z-score.¹⁹ The categories given were “low weight”, “normal weight”, “overweight” and “obesity” and were recategorized in two categories: “excess weight”, which included “overweight” and “obesity”, and “non-excess weight”, which included low and normal weight.

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