



Research report

Breakfast habits and factors influencing food choices at breakfast in relation to socio-demographic and family factors among European adolescents. The HELENA Study[☆]

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ARTICLE INFO

Article history:

Received 16 July 2010

Received in revised form 22 February 2011

Accepted 23 February 2011

Available online 3 March 2011

Keywords:

Socioeconomic factors

Parents

Siblings

Diet surveys

Breakfast

ABSTRACT

Breakfast consumption has been shown to be an important indicator of a healthy lifestyle. Little is known however about factors influencing breakfast consumption and food choices at breakfast in adolescents. The aim of the present study was therefore to describe breakfast habits, and factors influencing food choices at breakfast within the framework of the EU-funded HELENA Study, in 3528 adolescents from ten European cities. Additionally, socio-demographic differences in breakfast habits and in influencing factors were investigated. Half of the adolescents (and fewer girls than boys) indicated being regular breakfast consumers. Girls with mothers with a high level of education, boys from 'traditional' families and boys who perceived low family affluence were positively associated with breakfast consumption. Boys whose parents gave encouragement and girls whose peers ate healthily were more likely to be regular breakfast consumers. 'Hunger', 'taste', 'health concerns' and 'parents or guardian' were the most important influences on the adolescents' food choices at breakfast. Adolescents from southern Europe and girls reported to be more influenced by personal and socio-environmental factors. Socio-demographic differences, in particular regional and gender differences, need to be considered in discussions surrounding the development of nutritional intervention programs intended for adolescents.

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[☆] The authors thank all the adolescents who took part in the HELENA Study. The HELENA Study took place with the financial support of the European Community Sixth RTD Framework Program (Contract FOOD-CT-2005-007034), the Swedish Council for Working Life and Social Research (FAS), the Research Foundation – Flanders (FWO, CV), and the Spanish Ministry of Science and Innovation (RYC-2010-05957). The content of this article reflect only the authors' views and the European Community is not liable for any use that may be made of the information contained therein. The writing group takes sole responsibility for the content of this article.

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Introduction

Breakfast consumption has been shown to be an important indicator of a healthy lifestyle (Rampersaud, Pereira, Girard, Adams, & Metz, 2005). Adolescents who are regular breakfast consumers have reported better exercise patterns (Keski-Rahkonen, Kaprio, Rissanen, Virkkunen, & Rose, 2003) and cognitive performance (Hoyland, Dye, & Lawton, 2009). In addition, regular breakfast consumption is associated with a reduced risk of becoming overweight or obese among adolescents in Europe (Szajewska & Rusczyński, 2010). A good-quality breakfast can impact favorably on adolescents' mental health (O'Sullivan et al., 2009) and improve overall diet quality (Matthys, De Henauw, Bellemans, De Maeyer, & De Backer, 2007; Raaijmakers, Bessems, Kremers, & Van Assema, 2010). Despite the importance of daily breakfast consumption, breakfast skipping is common among many adolescents in Western countries with prevalences of breakfast skipping varying between 3% (Dialektakou & Vranas, 2008) and 34% (Rampersaud et al., 2005). Moreover, a good quality breakfast is consumed among just 10% or fewer of adolescents from Belgium (Matthys et al., 2007) and the Netherlands (Raaijmakers et al., 2010). Additionally interventions to promote breakfast have met with mixed success (Rampersaud et al., 2005). A better understanding of factors influencing adolescents' breakfast habits may help to develop more efficient interventions.

Previous studies indicate that breakfast habits are related to socio-demographic characteristics and regions (Vereecken, Dupuy, et al., 2009). Breakfast skipping is more common among girls, older adolescents and those from low socioeconomic groups (Vereecken, Dupuy, et al., 2009, Johansen, 2006 #3906; Keski-Rahkonen et al., 2003). A direct association between parents and offspring has been shown in Finland; if the parents consume breakfast regularly, the adolescents consume breakfast regularly as well (Keski-Rahkonen et al., 2003). North American adolescents who consume breakfast regularly report consuming meals with their families more often (Videon & Manning, 2003) and the whole home food environment seems to be associated with breakfast consumption (Boutelle, Birkeland, Hannan, Story, & Neumark-Sztainer, 2007; Videon & Manning, 2003). Hunger, taste, time and convenience are the strongest factors influencing adolescents' food choices, in general, among North American adolescents (Neumark-Sztainer, Story, Perry, & Casey, 1999). Studies investigating influences on food choices for breakfast in European adolescents are however lacking.

The aim of this study was therefore to investigate factors influencing the food European adolescents choose for breakfast. Additionally, associations with socio-environmental variables were investigated so that better tailored interventions to promote breakfast could be developed in future.

Methods

Study design and sampling

The HELENA Study is a school-based multi-centre study, designed to obtain reliable and valid data on nutrition and health-related factors from a sample of approximately 3000 adolescents aged 13.00–16.99 years in 10 European cities (Moreno et al., 2008). The selected cities were Athens (Greece), Dortmund (Germany), Ghent (Belgium), Heraklion (Greece), Lille (France), Pecs (Hungary), Rome (Italy), Vienna (Austria), Stockholm (Sweden) and Zaragoza (Spain).

The selection of the European cities was first of all a practical one. As it was not realistic to include a random sample of all European adolescents, it was decided to study a city-based sample, striving for representativeness of adolescents living in European cities. Within these cities, schools were randomly selected, but

stratified for geographical location. Within the participating schools classes were randomly selected, stratified by grade. All pupils of the selected classes were invited to participate. A class was considered eligible if the participation rate was at least 70%. The final database included only those participants who met the following criteria: were aged between 12.5 and 17.49 years, had informed consent signed by both parents and adolescents, had at least weight and height measured and completed at least 75% of the tests and questionnaires. Participants were excluded if they were participating simultaneously in another clinical trial or had an acute infection less than one week before the study.

The adolescents completed in-class surveys and tests during the 2006–2007 academic year. A more detailed description of the study design, sampling and procedure has previously been published (Moreno et al., 2008). The present study comprises a total of 3528 adolescents (52% girls), with a mean age of 14.7 years (SD 1.2).

The study was approved by the national or local independent ethics committee from the relevant European city (Beghin et al., 2008).

Measures

For this study, a selection of questions from three questionnaires was used: 'Food Choices and Preferences' (Gilbert et al., 2008), 'Healthy Diet Determinants' (Vereecken, De Henauw, et al., 2009) and 'Your Living Environment' (Iliescu et al., 2008). The questions and response options used are described in Table 1.

The 'Food Choices and Preferences' (FCP) questionnaire was developed based on the results of 44 focus groups (with 304 adolescents) (Gilbert et al., 2010) which explored attitudes and issues of concern among adolescents regarding food choices, preferences, healthy eating and lifestyles. The focus groups were conducted in five European countries (Belgium, Hungary, Spain, Sweden and UK) and did not include any of the HELENA adolescents. Information was gathered regarding eating habits at various meal occasions; factors that influence food choice; favorite foods, healthy foods and traditional foods; healthy lifestyle and physical activity; sources of information on healthy eating and lifestyle; and exploration of ideas for new product development. This provided insight into aspects such as snacking, the perceived importance of 'health' in influencing choices, and barriers to healthy eating (Gilbert et al., 2008).

Breakfast consumption was assessed based on agreement with the statement: "I often skip breakfast" with 7 answer categories ranging from strongly disagree to strongly agree. The potential factors influencing choice of foods at breakfast included personal (hunger, taste, health, daily routine, ease of preparation, medical reason and price) and socio-environmental factors (parents or guardian, availability, friends and school environment), with answer categories ranging from no and slight influence to moderate, strong and very strong influence.

Assessments about socio-environmental factors (e.g. 'how healthy are your parents'/peers eating habits' and 'how often do your parents'/peers encourage you to eat healthily') were derived from the 'Healthy Diet Determinants' questionnaire (Table 1) (Vereecken, De Henauw, et al., 2009). For the purpose of the questionnaire, a 'healthy diet' was defined for the adolescents as: 'a well balanced diet which contains a lot of fruit, vegetables and dairy products, a good portion of starchy foods like bread, potatoes and pasta, a moderate portion of meat or fish, and not too much fat and sugar. Also the intake of a large amount of fluid is very important in a healthy diet. The energy content of a healthy diet is in accordance with the needs of the human body' (Vereecken, De Henauw, et al., 2009).

The 'Your Living Environment' (YLE) questionnaire was designed to assess socio-demographic status and gathered general

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