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Research Report

School lunch menus and 11 to 12 year old children's food choice in three secondary schools in England—are the nutritional standards being met?

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Abstract

Objectives: To determine if the lunchtime food provided to schoolchildren adheres to nutritional standards and to examine the influence of children's food choice on nutrient intake at lunchtime.

Subjects/setting: Seventy-four children aged 11–12 years were recruited from three secondary schools. The school populations spanned a spectrum of socio-economic deprivation. Lunchtime food and nutrient intake was assessed over a 5 day period.

Design: Cross-sectional study of menu composition and children's food choice in relation to nutrient intake.

Methods: Dietary recording was by an indirect weighing method of menu composition and nutrient intake over a 5 day period. Statistical analysis was carried out using general linear modelling techniques including: *t*-test, one-way ANOVA and ANCOVA.

Results: One school met the standards on food group provision. Intakes of total fat, saturated fatty acids and monounsaturated fatty acids were greater in boys. Intake of folate was greater in girls. There were between-school differences (independent of gender) for intake of fatty acids, starch, calcium and folate, with socio-economic deprivation associated with a lesser nutrient intake. Children could have chosen meals higher in calcium, iron, folate and zinc and lower in starch and fat, from the extensive cafeteria menu of between 26 and 42 food. For some nutrients, providing 'healthier' food influences intake of those nutrients whilst for other nutrients, children's food choice predominates. The majority of children did not meet the recommended targets for lunchtime nutrient intake, especially for micronutrients.

Conclusions: Food provision in two out of three schools did not meet government guidelines and socio-economic deprivation was associated with worse food provision. Children from deprived areas were more likely to choose those foods of limited nutritional value than those from more privileged backgrounds. The statutory nutritional standards on their own, without a pricing policy to encourage healthier food choice or restrictions in food choice towards less healthy food are unlikely to catalyse the dietary changes that are so needed to ensure improved nutrient intakes amongst schoolchildren in England.

Keywords: Nutritional Standards; School lunch; Children; Food choice

Introduction

The typical adolescent diet in Great Britain is energy-dense and low in some minerals such as calcium, zinc and iron (Garrow, James & Ralph, 2002; Gregory, Lowe, Bates, Prentice, Jackson and Smithers, 2000; DoH, 1989). This is a cause for concern, as poor childhood diet, particularly leading to obesity, may predispose to the development of chronic disease in adulthood (Garrow et al., 2002; Must and Strauss, 1999; Gunnell et al., 1998). Levels of childhood obesity have increased over recent years; figures for 2002 show that almost 25% of English children aged between 2 and 15 years are classified as overweight or obese (HSE, 2002). School meals, which have the correct balance of energy, macronutrients and micronutrients, along with physical education have the potential to impact positively on children's health (HET, 2005).

Schools can make a significant contribution to encouraging and facilitating healthier eating patterns among schoolchildren (DfES, 2001a). In the UK there have been a variety of initiatives and schemes to encourage better eating habits within schools. Some of these, such as Breakfast Clubs and School Nutrition Action Groups have been government-led. Paradoxically, school lunch provision has been subject to few

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nutritional strictures and it was only in April 2001, after a 20 year gap, that mandatory nutritional standards (DfES, 2001a) were applied to lunchtime food provision in the secondary school sector (11–18 year olds).

These standards are specific in the range of foods, which should be offered to meet nutritional requirements. The standards stipulate that each day there should be two food items from the following food groups: starchy food, vegetables, fruit, milk and dairy products, and non-dairy sources of protein. In addition, red meat should be available three times per week and fish twice per week. There is guidance for caterers on cooking methods and recommendations for good food practice. For secondary school meals, it is recommended that children should have a free cafeteria-style choice, although healthier foods should be prominent. Thus, whilst school lunches may theoretically meet nutritional standards, children may opt for foods of low nutritional value.

At the outset of this study, there was a dearth of quantitative information on the nutritional quality of school lunches. Subsequently, a Department for Education and Skills (DfES) and Food Standards Agency (FSA) commissioned study, assessed whether food provided at school lunches in maintained secondary schools (pupils from 11 to 18 years) in England complied with statutory nutritional standards and associated guidance (FSA, 2004). This national study reported that food provision in a majority of schools fell short of standards. Furthermore, children's food choices were found to be nutritionally wanting. The current study examines relations between children's socio-economic background, menu composition and children's lunchtime nutrient intake in view of the nutritional standards.

Methods

Participants

Seventy-four children (24 boys, 50 girls) aged 11–12 years were recruited from three secondary schools in Sheffield, UK. Parental consent was obtained for 55% of the eligible children targeted to join the study. The schools were chosen to reflect social and catering diversity. The percentage of pupils taking free school meals was used as an index of social and economic deprivation. The percentage eligible for free school meals was 39% in School 1 (S1), 1.5% in School 2 (S2), and none in School 3 (S3). S1 and S2 were State-maintained schools. S3 was a girl's private school, which did not fall under the aegis of statutory nutritional standards, but was chosen to represent variety in the type of catering provision. The sample numbers were 28, 25 and 21 in schools 1, 2, and 3, respectively. The gender composition was 15 boys and 13 girls at S1, 9 boys and 16 girls at S2 and 21 girls at S3. Ethical approval for the study was obtained from the North Sheffield Ethics Committee.

Study design

The study design was a cross-sectional study. Dietary data were collected over a period of five consecutive days in each school to account for variability in daily food provision and within-subject variation in food choice. Fieldwork took place during May and June 2003.

Dietary methodology

Definition of the 'school meal'

For the purpose of this study, the 'school meal' was defined as any food, which was obtained directly from the kitchens during the lunchtime period. It excluded all food bought from the vending machines, tuck shops or purchased off the school premises, food brought from home to eat at school, packed lunches, and any items bought from the kitchen at other times of the day.

Each morning of the survey, details of the foods comprising the school lunch were obtained from the catering staff. Ingredients and cooking methods of every food item on offer were recorded. Catering staff was asked to provide a standard portion of each food item. All food items on offer were weighed using SOEHNE digital weighing scales, accurate to 1 g. The collection of this information preceded the video recording of the children's lunchtime food choices.

The lunchtime food chosen by each participant was then recorded using a Panasonic digital video camera. Only the child's plate/tray was photographed. The identity of the child was recorded by means of a numbered label. Condiments such as tomato ketchup and mayonnaise were included in the record, as they were bought in sachet form, with manufacturers' portion weight information provided. Salt and vinegar were not included although they were available in all three schools. This was because they were provided in free-flowing pots, making it difficult to determine if and how much had been used on each child's plate. Uneaten food was also recorded using the camera. The proportion of waste food left by each individual child was estimated visually from the photographic record.

At the end of the school lunch period, all videoed information was transferred from video to written format. The combination of individual children's food choice recorded on video and the weights of average portions obtained from the catering staff were used to compile a weighed inventory of food eaten at lunchtime. The net amount of foods consumed by each child during the survey week was entered into the NetWisp dietary database (Tinuviel Software, Cheshire) for the calculation of nutrient intake. The NetWisp food composition database comprises Her Majesty's Stationery Office nutrient databank based on McCance and Widdowson 5th edition plus supplements (HMSO, 1991). Sugars include free monosaccharides (glucose, fructose, galactose,) and disaccharides (sucrose, maltose, lactose) and are expressed per gram monosaccharide. The Caroline Walker Trust nutrient targets are specific to non-milk extrinsic sugars as opposed to total sugars, therefore we have not included this target in our analysis.

Five-day menus for each school were compiled and were used to check if the range of foods on offer met the