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Dietary intake of 9–10-year-old and 11–12-year-old children in Liverpool

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Abstract

Objective: To describe the eating habits of children in Liverpool and compare two age groups that bridge the transition from primary to secondary school.
Design: Two cross-sectional studies carried out one year apart using a food intake questionnaire that records whether or not each child claims to have eaten specific marker foods on the previous day.
Setting: Primary and secondary schools in Liverpool.
Subjects: Six hundred and forty-nine children aged 11 or 12 years and 3556 children aged 9 or 10 years.
Results: Fewer older children ate breakfast (68–82%), especially the girls, and not eating breakfast was associated with eating on the way to school in the younger children. More of the older girls ate nothing at breakfast or on the way to school. Overall, the less desirable foods were reported to have been eaten by more children, of both ages, than the more desirable foods. Fruit, however, was mentioned by most children (69–77%) but the next 10 foods mentioned by most children were all less desirable ones. Only 31% of primary and 21% of secondary children ate both fruit and vegetables but 23% of primary and 26% of secondary children ate neither fruit nor vegetables. Overall, more of the girls of both age groups claimed to have eaten foods that would normally be encouraged.
Conclusions: Food choice changes appreciably between primary and secondary school and, in some key respects, for the worse. In particular, far more children of both age groups need to be eating fruit and vegetables every day.

Keywords
Children
Food intake
Diet
Schools

Diet-related diseases are common, expensive and serious: dental caries is still a major problem especially in deprived areas[1], the National Health Service spends £3.8 billion per year on treating heart disease, stroke and related illnesses[2] and approximately 25% of cancer deaths are attributable to diet[3]. Poor dietary habits in childhood may affect the health of the child and contribute to the later development of diet-related disorders[4], and may affect academic performance and activity levels[5]. In addition, over 90% of bone is formed during childhood and adolescence, so diet is vital to achieve peak bone mass and may help avoid osteoporosis[6]. Finally, obesity in childhood is becoming a global epidemic[7]. The early stages of atherosclerosis, dyslipidaemia and hypertension have been found in some children and there is evidence that these, along with obesity, 'track' into adulthood[8].

The typical diet of UK children is amongst the worst in Europe[5], being high in fat and sugar, low in fibre, iron and calcium, and possibly folate[9]. The recent national survey of the dietary habits of children[10] indicated low consumption of fruit and vegetables and high consumption of less desirable foods such as confectionery, savoury snacks, soft drinks and chips. Intakes of saturated fats and non-milk extrinsic sugars were high (especially from soft drinks and chocolate confectionery). Differences between boys and girls were not consistent but there were many age-related differences[10]; notably, more of the younger children ate biscuits, sugar confectionery, savoury snacks and soft drinks. Adamson *et al.*[11] found evidence of deterioration in the dietary habits of adolescents between 1980 and 1990 (the proportion of non-milk extrinsic sugars increased, mainly from snacks foods) although some improvements had occurred, e.g. fibre and iron intakes increased. A recent survey of over 6000 children discovered that only 59% of respondents ate fruit at least once a day and only 33% ate vegetables or salad at least once a day[12]. Hackett *et al.*[13] found that the foods claimed to have been eaten by most school-aged children (13–14 years) were confectionery, biscuits and cakes, and that the diets of girls tended to be better than those of boys. In addition, more children from the least affluent areas consumed a greater number of the least desirable foods[13,14]. In general, the more desirable foods – such as fruit and vegetables, wholemeal bread and reduced-fat

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milk – are less popular than the least desirable foods, e.g. confectionery, crisps, chips and soft drinks[13].

Adolescence is a period of rapid transition, physically, mentally and socially. Children gradually become independent and increasingly make decisions for themselves, including ones concerning their diet. A crucial period is the move from primary school to secondary school, and it is at this time that marked changes in diet may be expected. Sportslinx is a new health promotion initiative based on a partnership between Liverpool Leisure Services Directorate, Liverpool John Moores University, Liverpool Education Directorate, Liverpool Health Authority, Liverpool City Community Colleges and National Governing Bodies for Sport. Sportslinx aims to promote the well-being of children in Liverpool primarily by increasing participation in sport. This project provided the opportunity to investigate the difference in dietary habits between the oldest children at primary schools and those in the first year at secondary schools.

Methods

The survey in secondary schools was carried out in the school year 1996/97 as a pilot study for the Sportslinx project. The head teachers of five schools were approached, selected in an unsystematic opportunistic way to reflect a range of areas of the city; all agreed to allow their Year 7 children to take part (11–12 year olds).

The survey in primary schools was carried out in 1998/99. Head teachers of all primary schools in Liverpool were invited to allow all their Year 5 (9–10-year-old) children to take part in the Sportslinx programme.

Written consent was obtained from parents allowing their child to take part. Unfortunately, a question relating to eligibility for receipt of free school meals, which would indicate social status, was forbidden. Questionnaires concerning the intake of foods on the previous day, physical activities and preferences for sporting activity were completed by the children in their usual classrooms and supervised by a teacher. Only the results from the food intake questionnaire (FIQ) are reported here.

An appointment was made for all children to be transported to a local leisure centre where all of the other procedures were completed. Anthropometric measurements were taken and the children also took part in the EUROFIT tests, all of which will be reported elsewhere. Questionnaires were completed not more than 2 weeks before the tests.

The FIQ has been used extensively, in slightly different forms, over the past 12 years[13–17]; its validity has been reported[18] and its reliability investigated (Johnson and Hackett, submitted for publication). The FIQ was not designed to measure nutrient intake but is an epidemiological tool to describe the eating habits of groups. It is based on recall of foods eaten on the previous day. A list of foods (44 in all) was provided to which the subject has to answer the same question for each food: 'Did you, at any time yesterday, eat any amount of … YES/NO'. The recall of intake on the previous day has been simplified as far as possible and the foods were chosen to represent the major foods mentioned in advice regarding healthy eating, i.e. foods to eat more of/more often and those to eat less of/less often. The main outcome variable therefore was the proportion of subjects who claimed to have eaten each food (or not) on the previous day. In addition, foods were grouped according to various characteristics: fatty (10), sugary (11), fibrous (8), and positive markers (20) and negative markers (23); only the last two groups are mutually exclusive. The positive markers are those foods which subjects would normally be recommended to eat more of/more often and the negative markers those foods which subjects would normally be recommended to eat less of/less often. Thus the number of foods consumed in each group was calculated to give further outcome variables.

Analysis

All data were analysed using Statistical Package for the Social Sciences. Comparisons between proportions of children claiming to have consumed particular foods were made using chi-square tests, whilst differences between mean number of foods consumed in each group were evaluated using unpaired *t*-tests (two-tailed) and confidence intervals for the differences. The difference in power between the two surveys (due to sample size) to reveal differences between the sexes should be noted; that is, due to the large sample size, small differences may be 'significant' even though of little practical significance. In addition, a 'significant' difference may be apparent for the primary children but not the secondary children simply because of the difference in sample size affecting the power of the respective tests.

Results

Only five secondary schools were approached for the pilot study and all took part, resulting in a total of 649 children aged 11 or 12 years completing the FIQ (one child did not record his/her gender or fill in the name of the school he/she attended). Less than 1% of children did not return completed consent forms allowing them to take part. Three hundred and seventy-five boys and 273 girls completed the FIQ but the numbers answering each question varied and the total for each question can be inferred from the figures in the tables. The schools had catchment areas that reflected the wide range of socio-economic conditions across the city.

Of the 122 primary schools in Liverpool, 77 took part in the study and a total of 3556 children aged 9 or 10 years completed the FIQ (there were 6045 in the cohort), 1801 boys and 1744 girls (two individuals did not record gender). Only nine children did not return completed

consent forms allowing them to take part. Once again, the numbers answering each question varied but can be calculated from the tables. Children absent when the tests were completed were not followed up.

The proportion of children not eating (and/or not drinking) before leaving home for school (breakfast) was markedly higher in the older children (Table 1) and amongst the older girls compared with the older boys. There was a greater proportion of older children who consumed on the way to school, which was more common amongst the boys in both age groups. However, those primary school children who did not eat breakfast were more likely to eat on the way to school (primary boys: $chi^2 = 11.5$, df = 1, $P = 0.001$; primary girls: $chi^2 = 64.9$, df = 1, $P < 0.00$) but not the older children (secondary boys: $chi^2 = 0.1$, df = 1, $P > 0.05$; secondary girls: $chi^2 = 1.5$, df = 1, $P > 0.05$). Thus many secondary children were eating breakfast in addition to eating on the way to school (more boys, 25.3%, than girls, 14.3%; $chi^2 = 11.8$, df = 1, $P < 0.000$). Conversely, some secondary children, especially girls, did not eat breakfast or on the way to school (more girls, 23.1%, than boys, 12.0%; $chi^2 = 13.9$, df = 1, $P < 0.000$). For the younger children, more boys (12.6%) than girls (7.2%) ate breakfast and on the way to school ($chi^2 = 28.0$, df = 1, $P < 0.000$) but a similar proportion of boys (5.9%) and girls (7.2%) neither ate breakfast nor on the way to school ($chi^2 = 2.2$, df = 1, $P > 0.05$).

A significant, but low, proportion of children (maximum 18.1%) took lunch 'out of school but not at home' and this was significantly greater in the older children, especially the boys (Table 1).

Positive markers

There were few differences between the proportions of boys and girls claiming to have eaten the positive marker foods (Table 2). For both age groups, more boys claimed to have eaten baked beans and low-fat burgers/sausages and more girls claimed to have eaten salad and baked potatoes. More of the younger boys than girls claimed to have eaten artificial sweeteners and brown breads. There were also few differences between the age groups. The proportion of older children claiming to have eaten fruit, vegetables, tinned fish and diet fizzy drinks was lower, but a higher proportion of older children claimed to have eaten brown breads and polyunsaturated spreads.

Fruit was the food claimed to have been eaten by most children of both sexes and both age groups (Table 2). The next 10 foods most commonly mentioned, however, were all negative markers (Table 3) (fizzy sugared soft drinks, chocolate biscuits, chocolate confectionery, crisps, sweets, plain biscuits, sugar added to food, sugar added to drinks and cordial with sugar). Consumption of both fruit and vegetables was reported by only 31% of primary children and 21% of secondary children. Conversely, 23% of primary and 26% of secondary children did not report eating fruit or vegetables.

Negative markers

Eight of the 23 less desirable, negative marker foods were reported as having been eaten by more boys than girls of primary age (pre-sugared cereals, cakes, chocolate confectionery, sugar added to food, sugar added to drinks, sausages and burgers, fried fish and full-fat milk) and most of these differences were also present in the older children (Table 3). Fewer older children tended to have reported consuming butter, chocolate biscuits, roast potatoes, crisps, sugared fizzy drinks and adding sugar to foods than the younger children. Conversely, more of the older children claimed to have consumed hard margarine and fried vegetables.

The boys consistently claimed to have eaten more of the foods in the aggregated food groups than the girls (giving higher mean scores) but there appeared to be no differences between the age groups (Table 4) except that the younger children recorded slightly more negative

Table 1 Reported intake pattern on the previous day

	Primary children			Secondary children			Primary compared with secondary children
	Boys ($n = 1803$)	Girls ($n = 1746$)		Boys ($n = 375$)	Girls ($n = 273$)		
Meal	*n* (%)	*n* (%)		*n* (%)	*n* (%)		
Eat at breakfast?	1598 (92.2)	1518 (90.0)	*	308 (82.1)	186 (68.1)	**	††
Drink at breakfast?	1416 (79.9)	1380 (80.5)	NS	300 (80.0)	201 (73.6)	$P = 0.06$	NS
Eat on the way to school?	253 (14.7)	170 (10.1)	**	117 (31.2)	63 (23.1)	*	††
Drink on the way to school?	175 (10.2)	132 (7.9)	*	99 (26.4)	47 (17.2)	**	††
Eat at lunchtime?	1705 (96.8)	1662 (97.0)	NS	346 (92.3)	260 (95.2)	NS	NS
Drink at lunchtime?	1617 (91.8)	1583 (92.6)	NS	337 (89.9)	244 (89.4)	NS	NS
Go home for lunch?	97 (5.6)	73 (4.4)	NS	24 (6.4)	19 (7.0)	NS	$P = 0.06$
Go out of school for lunch?	209 (12.2)	192 (11.6)	NS	68 (18.1)	46 (16.8)	NS	††

NS = not significant, $P > 0.10$.
* Difference between boys and girls, $P < 0.05$.
** Difference between boys and girls, $P < 0.01$.
† Difference between primary and secondary children, $P < 0.05$.
†† Difference between primary and secondary children, $P < 0.01$.

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Table 2 Reported intake of positive marker foods ($n = 20$) on the previous day

Food	Primary children			Secondary children			Primary compared with secondary children
	Boys ($n = 1803$)	Girls ($n = 1746$)		Boys ($n = 375$)	Girls ($n = 273$)		
	n (%)	*n* (%)		*n* (%)	*n* (%)		
High-fibre flake cereals, etc.	433 (26.1)	374 (23.5)	$P = 0.8$	96 (25.6)	44 (16.1)	**	NS
High-fibre oat-based cereals	300 (18.4)	266 (17.0)	NS	53 (14.1)	36 (13.2)	NS	NS
'Brown' breads	388 (23.1)	318 (19.7)	*	111 (29.6)	76 (27.8)	NS	††
Polyunsaturated spread	524 (30.8)	499 (30.3)	NS	91 (24.3)	71 (26.0)	NS	$P = 0.52$
Low-fat spread	228 (13.6)	216 (13.3)	NS	41 (10.9)	31 (11.4)	NS	NS
Artificial sweetener	165 (10.0)	112 (7.1)	**	30 (8.0)	21 (7.7)	NS	NS
Mashed potatoes	322 (19.1)	287 (17.6)	NS	64 (17.1)	44 (16.1)	NS	NS
Boiled potatoes	186 (11.1)	182 (11.2)	NS	48 (12.8)	30 (11.0)	NS	NS
Baked or jacket potatoes	231 (13.9)	281 (17.3)	**	41 (10.9)	48 (17.6)	*	NS
Fruit	1251 (74.2)	1277 (77.0)	$P = 0.07$	261 (69.6)	188 (68.9)	NS	††
Baked beans	544 (32.4)	374 (23.0)	**	130 (34.7)	59 (21.6)	**	NS
Salad vegetables	503 (30.1)	538 (33.1)	$P = 0.06$	94 (25.1)	89 (32.6)	*	NS
Vegetables	673 (40.2)	625 (38.8)	NS	98 (26.1)	71 (26.0)	NS	††
Low-fat burgers or sausages	242 (14.4)	157 (9.6)	**	41 (10.9)	15 (5.5)	*	$P = 0.059$
Cooked fish (not fried)	63 (3.8)	50 (3.0)	NS	17 (4.5)	11 (4.0)	NS	NS
Tinned fish	240 (14.3)	202 (12.3)	$P = 0.10$	27 (7.2)	24 (8.8)	NS	††
Low-fat cheese	163 (9.8)	152 (9.4)	NS	31 (8.3)	19 (7.0)	NS	NS
Diet fizzy drink	739 (44.5)	703 (43.4)	NS	132 (35.2)	102 (37.4)	NS	†
Diet cordial	431 (26.4)	392 (24.7)	NS	85 (22.7)	58 (21.2)	NS	NS
Any low-fat milk	673 (43.0)	646 (42.3)	NS	172 (45.9)	121 (44.3)	NS	††

NS=not significant, $P > 0.10$.
* Difference between boys and girls, $P < 0.05$.
** Difference between boys and girls, $P < 0.01$.
† Difference between primary and secondary children, $P < 0.05$.
†† Difference between primary and secondary children, $P < 0.01$.

Table 3 Reported intake of negative marker foods ($n = 23$) on the previous day

Food	Primary children			Secondary children			Primary compared with secondary children
	Boys ($n = 1803$)	Girls ($n = 1746$)		Boys ($n = 375$)	Girls ($n = 273$)		
	n (%)	*n* (%)		*n* (%)	*n* (%)		
Pre-sugared cereals	640 (37.9)	531 (32.7)	**	137 (36.5)	78 (28.6)	*	NS
Low-fibre cereals	490 (30.2)	470 (30.4)	NS	116 (30.9)	72 (26.4)	NS	NS
Butter	854 (49.1)	804 (47.7)	NS	107 (28.5)	64 (23.4)	NS	††
Hard margarine	101 (5.9)	82 (5.0)	NS	51 (13.6)	26 (9.5)	NS	††
Plain biscuits	842 (49.0)	780 (46.8)	NS	180 (48.0)	119 (43.6)	NS	NS
Chocolate biscuits	1037 (60.6)	999 (60.2)	NS	194 (51.7)	145 (53.1)	NS	††
Cakes & pastries, e.g. scones	626 (36.2)	541 (32.1)	*	138 (36.8)	70 (25.6)	**	NS
Puddings, e.g. fruit pie	479 (27.9)	439 (26.3)	NS	89 (23.7)	69 (25.3)	NS	NS
Sweets, e.g. toffees	1005 (58.0)	1027 (61.0)	$P = 0.07$	216 (57.6)	149 (54.6)	NS	††
Chocolate confectionery, etc.	1013 (59.1)	912 (54.7)	**	211 (56.3)	102 (37.4)	**	††
Sugar added to foods	811 (47.2)	684 (41.2)	**	153 (40.8)	85 (31.1)	*	†
Sugar added to drinks	855 (49.3)	779 (46.3)	$P = 0.07$	216 (57.6)	121 (44.3)	**	††
Roast potatoes	285 (17.2)	283 (17.6)	NS	44 (11.7)	18 (6.6)	*	††
Chips	866 (51.5)	836 (51.3)	NS	194 (51.7)	129 (47.3)	NS	NS
Crisps	1107 (66.3)	1123 (69.0)	$P = 0.09$	189 (50.4)	141 (51.6)	NS	††
Fried vegetables	237 (14.2)	215 (13.5)	NS	84 (22.4)	50 (18.3)	NS	††
Sausages/burgers (ordinary)	571 (33.8)	413 (25.2)	**	169 (45.1)	78 (28.6)	**	††
Meat pies, etc.	382 (22.7)	301 (18.5)	**	78 (20.8)	46 (16.8)	NS	NS
Fish fried	135 (8.0)	98 (5.9)	*	28 (7.5)	10 (3.7)	*	NS
Fried eggs	194 (11.5)	162 (9.9)	NS	53 (14.1)	21 (7.7)	*	NS
Fizzy drink with sugar	1126 (66.9)	1003 (61.0)	**	226 (60.3)	150 (54.9)	NS	††
Cordial with sugar	978 (58.3)	932 (57.2)	NS	211 (56.3)	160 (58.6)	NS	NS
Milk: full-fat	1067 (64.3)	927 (57.3)	**	161 (42.9)	99 (36.3)	$P = 0.09$	††

NS = not significant, $P > 0.10$.
* Difference between boys and girls, $P < 0.05$.
** Difference between boys and girls, $P < 0.01$.
† Difference between primary and secondary children, $P < 0.05$.
†† Difference between primary and secondary children, $P < 0.01$.

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Table 4 Mean intake of marker foods by gender and school

	Primary children						Secondary children					
	Boys ($n = 1803$)		Girls ($n = 1746$)		95% CI		Boys ($n = 375$)		Girls ($n = 273$)		95% CI	
Food	Mean	SD	Mean	SD	Difference	*P*-value	Mean	SD	Mean	SD	Difference	*P*-value
Positive marker foods ($n = 20$)	6.4	3.01	6.2	2.75	0.015, 0.395	0.03	6.3	3.14	6.1	2.42	−0.262, 0.598	0.44
Negative marker foods ($n = 23$)	8.7	3.79	8.2	3.40	0.259, 0.730	0.00	8.7	3.92	7.3	3.29	0.763, 0.188	0.00
Fatty ($n = 10$)	2.6	1.64	2.5	1.51	0.048, 0.256	0.00	2.7	1.76	2.1	1.47	0.273, 0.773	0.00
Fibrous ($n = 8$)	2.4	1.60	2.3	1.49	−0.025, 0.178	0.14	2.4	1.61	2.2	1.41	−0.115, 0.354	0.12
Sugary ($n = 11$)	5.2	2.40	4.9	2.21	0.127, 0.431	0.00	5.3	2.45	4.6	2.16	0.327, 1.042	0.00

	Primary children		Secondary children			
	$n = 3556$		$n = 649$		95% CI	
	Mean	SD	Mean	SD	Difference	*P*-value
Positive marker foods ($n = 20$)	6.3	2.89	6.2	2.87	−0.07, 0.41	0.18
Negative marker foods ($n = 23$)	8.4	3.60	8.1	3.73	0.07, 0.68	0.014
Fatty ($n = 10$)	2.5	1.58	2.4	1.67	−0.25, 0.02	0.09
Fibrous ($n = 8$)	2.4	1.55	2.3	1.53	−0.19, −0.07	0.39
Sugary ($n = 11$)	5.1	2.32	5.0	2.32	−0.32, 0.07	0.22

SD – standard deviation; 95% CI – 95% confidence interval.

marker foods. Overall the girls of both age groups claimed to eat fewer of most of the negative marker foods and more of two of the positive markers, indicating a better choice of foods.

Discussion

The FIQ is potentially a valuable tool in nutritional epidemiology and in promoting healthy eating by enabling the dietary habits of large numbers of children to be recorded. Since it depends upon each individual's recall of intake on the previous day, it is subject to lapses of memory (and lack of awareness about exactly what was consumed), systematic bias (most likely in favour of better eating habits, underreporting of negative markers and overreporting positive marker foods) and it demands a basic level of literacy (although the format is simple and consistent). Some technical information is also required, for example to identify the type of spreading fat consumed. These factors, however, are common to every dietary survey technique and should not prevent comparisons being made over time or by school and sex. The importance of food-based guidelines has been stressed[19,20] and if guidelines are given in terms of foods, it is logical to assess their success (dietary intake) in the same terms.

Several primary teachers reported having to give assistance to children filling in the questionnaires, indicating that the younger children were having more difficulty in completing the questionnaires than the older children. That more of the older children reported consuming hard margarine and less butter and fewer polyunsaturated spreads may indicate that the younger children had difficulty in differentiating between the different types of spreading fat. It is suspected, therefore, that the differences found for spreading fats are due to awareness rather than differences in behaviour.

More girls and older children did not report eating breakfast (8–32% in total). A study of 7–8 year olds in Scotland found that 94% reported eating breakfast at least twice per week[21], which is similar to the proportion of younger children reporting eating breakfast. These authors also found that breakfast made a useful contribution to achieving dietary goals. This suggests that diet deteriorates with age (girls), which might be aggravated by snack foods bought on the way to school (boys). Of particular concern is the relatively high proportion of the older girls who did not eat breakfast (32%) or on the way to school (23%). Anderson *et al.*[22] compared the diets of 15 year olds unfavourably with those of 35 year olds. Possibly the deterioration in diet during adolescence is temporary but only a longitudinal study could elucidate this.

The proportion of children eating outside the schools at lunchtime for whatever reason varied greatly (15–100%). This would seem to reflect the availability of food in the area around the school and possibly each school's policy (which also vary but were not recorded). Those eating lunch out of school but not at home may be eating at a relative's or friend's house, but the higher proportion of the older children eating outside school may represent children effectively roaming the streets; a further argument in favour of attractive school meals.

A previous study using the FIQ found more marked

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differences by sex, with a higher proportion of boys recording the least desirable foods than girls[13], but this was for slightly older children (13–14 years). This suggests that a gender-related difference develops with age to the detriment of the boys. Anderson *et al.*[22] suggested limited parental influence on the eating habits of Scottish 15 year olds and a 'relative uniformity' in eating habits by sex or social class.

Neither Anderson *et al.*[22] nor Gregory *et al.*[10] found fruit to be the most popular food but crisps, sweets and chocolates, biscuits and soft drinks, equivalent to the negative marker foods in this study, were very prominent. Fruit was prominent in summer but the Scottish population has been notorious for many years for its low consumption of fruit and vegetables[23]. Strain *et al.*[24] also reported crisps, chips, biscuits and cereals to be prominent in the diet of 12–15 year olds in Northern Ireland, and rather low vegetable but not fruit intakes compared with adolescents in other European countries. These authors concluded by expressing concern about the adequacy of diets of Northern Irish adolescents that also appears to be appropriate for British children generally[10] and these Liverpool children in particular.

It is encouraging that fruit was the food mentioned by most of the Liverpool children (69–77%), which reflects its wide appeal and potential for focus in healthy eating advice. Cox *et al.*[25] showed that encouraging fruit intake was more successful than encouraging intake of vegetables. The proportion of children eating fruit still falls well short of the target for approximately all children to eat fruit every day, and is one of the lowest levels in Europe[5]. Perhaps fruit was relatively poorly available which limited intake (as was identified for adults by Anderson *et al.*[26]), for example, in school tuck shops. Lack of knowledge was not identified as a barrier to healthy eating in a large pan-European study of adults[20]. That fewer older children reported eating fruit and/or vegetables (or diet fizzy drinks) suggests that, in some key respects, diet may deteriorate with age. Perhaps children are keen to exert more influence over their choice (purchase) of foods, for example by buying food on the way to and from school, which was reported by more of the older children and especially the boys.

This study has once again shown that the diets of children are dominated by a high prevalence of undesirable foods, and low prevalence of more desirable foods. It also suggests that diet may deteriorate in some key respects with the transition from primary to secondary school. This is likely to be linked to growing independence and highlights the importance of working with children in the last year of primary school and the first year at secondary school to promote healthy eating habits. The popularity of fruit suggests that it should be the focus for healthy eating campaigns for this age group but situational barriers must be removed to ensure that the healthy choice is the easy choice.

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