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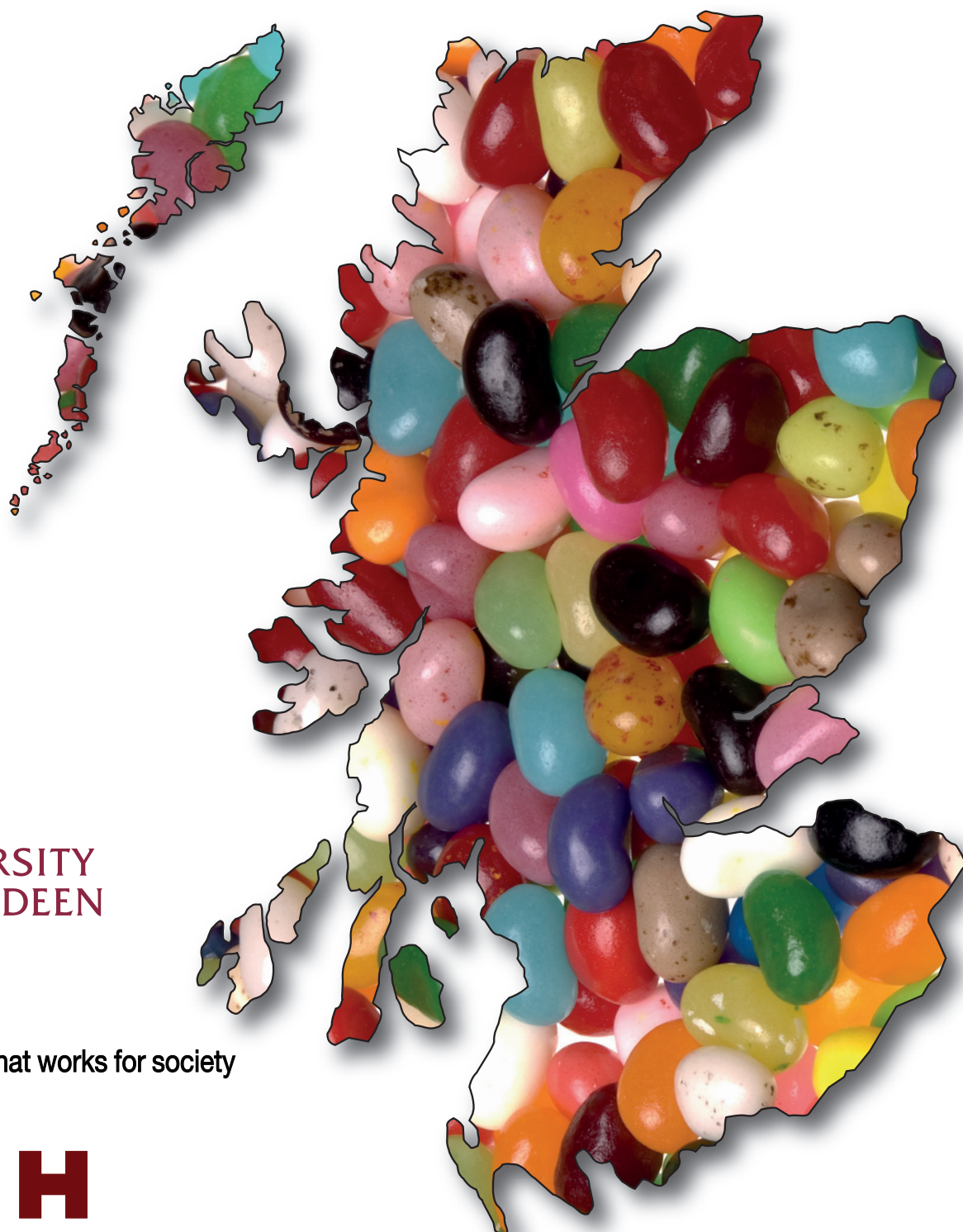
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Survey of Diet Among Children in Scotland (2010)

Volume 2: Food and drink purchases around the school day

Jennie I Macdiarmid, Leone CA Craig, Wendy Wills, Catherine Bromley,
Lindsey F Masson & Geraldine McNeill



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Survey of Diet Among Children in Scotland (2010)

Volume 2: Food and drink purchases around the school day

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Research Project FS424019
Food Standards Agency in Scotland

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Contents

Executive Summary	1
Notes to tables	4
1. Introduction.....	5
1.1 Background	5
1.2 Relevant initiatives and policies in Scotland	6
1.3 Aims of the Food Purchasing Module	6
2. Methods.....	7
2.1 Development of the Food Purchasing Module (FPM).....	7
2.2 The Food Purchasing Module used in the Survey.....	8
2.2.1 Computer-assisted personal interview	8
2.2.2 Self completion questionnaire for secondary school children	9
2.3 The survey sample	9
2.4 Data analysis	10
2.4.1 Weighting.....	10
2.4.2 Exclusions based on routing errors	10
2.5 Ethics approval	10
3. Response	11
3.1 Response to the FPM	11
3.2 Sample included in the FPM data analysis.....	11
4. Opportunities for children to purchase food and drinks outside of school on school days.....	14
4.1 Proportion of children passing places that sell food and drinks on the way to or from school	14
4.2 People accompanying children when they pass places that sell food and drinks on the way to and from school.....	16
4.3 Opportunities for secondary school children to purchase food and drinks outside of school at break time and at lunchtime.....	16
5. Food or drink purchases made by children outside of school on school days	19
5.1 Children purchasing food and drinks on the way to or from school.....	20
5.2 Proportion of secondary school children purchasing food and drinks at break time (or free periods) or at lunchtime	20
5.3 The types of food and drink purchased by secondary school children outside of school during the school day.....	21

5.4	Places from which children purchase food or drinks outside of school during the school day.....	22
6.	Factors influencing children's purchase of food or drinks outside of school on school days.....	27
6.1	Reasons why secondary school children purchase food or drinks outside of school at lunchtime	28
6.2	Parental input into secondary school children's purchasing choices at lunchtime	28
6.3	Reasons why children <i>never</i> purchase food or drinks	29
6.3.1	Reasons why primary and secondary children who pass places on the way to or from school <i>never</i> purchase food or drinks	29
6.3.2	Reasons why secondary school children who have access to places at break time and at lunchtime <i>never</i> purchase food or drinks	29
7.	Discussion and Recommendations.....	31
7.1	Findings from the survey.....	31
7.1.1	Food or drink purchasing opportunities and behaviours	31
7.1.2	Factors influencing whether children purchase food or drink outside of school	32
7.2	Methodology for the FPM.....	33
7.3	Implications.....	34
7.3.1	Implications for health improvement.....	34
7.3.2	Implications for further research	35
8.	References.....	38

List of tables

Table 3.1	Response to self-completion questionnaire (based on those responding to interview), by sex	13
Table 3.2	Response to self-completion questionnaire (based on those responding to interview), by SIMD quintile.....	13
Table 3.3	Response to self-completion questionnaire (based on those responding to interview), by urban/rural classification.....	13
Table 4.1	Proportion of children walking or cycling most of the way to and from school, by SIMD quintile.....	17
Table 4.2	Proportion of children walking or cycling past places that sell food and drink on the way to or from school	18
Table 5.1	Proportion of children purchasing food or drink either on the way to or from school	23
Table 5.2	Proportion of secondary school (S1-6) children purchasing food or drink outside school at breaktime (or free periods) and at lunchtime.....	24
Table 5.3	Food and drinks purchased outside school across the day and at lunchtime by all secondary school (S1-6) children.....	25
Table 5.4	The range of places from which secondary school children purchase food or drinks on the way to and from school and at lunchtime	26
Table 5.5	The places from which secondary school children reported <i>most frequently</i> purchase food or drinks at lunchtime.....	26
Table 6.1	Reasons why secondary school children purchase food or drinks outside school and choose to leave the school grounds at lunchtime	30
Table 6.2	Reasons why children <i>never</i> purchase food or drinks on the way to or from school.....	30
Table 6.3	Reasons why secondary school children with access never purchase food or drinks at breaktime and at lunchtime.....	30

List of figures

Figure 3.1	Sample included in the FPM data analysis.....	12
Figure 4.1	Mode of transport used to travel most of the way to and from school, by age group	15
Figure 4.2	People accompanying children as they pass places selling food or drinks on the way to and from school, by age group	16

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Executive Summary

This is the second of two volumes reporting on the Survey of Diet Among Children in Scotland (2010) and contains the main findings from the Food Purchasing Module (FPM). The FPM was newly designed for the 2010 survey to assess the food and drink purchasing habits of school children outside of school on school days. This is the first time purchasing habits have been measured in a representative sample of school-aged children in Scotland.

Aim

The aim of the FPM was to assess and explore factors associated with the food and drink purchasing habits of school children outside of school on school days.

Methods

Children in primary school years P4-7 and all secondary school children (S1-6) completed the FPM. For primary school children the questions were interviewer administered for ease of completion but for secondary school children some questions were interviewer administered and others formed part of a self-completion questionnaire (SCQ). Both primary and secondary school children were asked about purchasing habits on the way to and from school, but only secondary school children were asked about purchases outside of school at break times and lunchtime. Questions included perceived opportunities to purchase food or drinks, reported purchasing (and type) of food or drinks and reasons for choosing to purchase food or drink outside of school. Purchases only included food or drinks bought by the child for themselves, not items bought for them by other people, and therefore the FPM does not necessarily represent everything consumed by children at these times. The results are reported as the percentage of children that 'ever' purchase food or drinks outside of school, which could be daily or only very occasionally, and therefore does not reflect the frequency of purchasing. The question about the opportunity to purchase food or drinks on the way to or from school was based on children walking or cycling past places selling food or drinks.

Results

All P4-7 children (n=564) who participated in the main survey interview completed the FPM and 93% of secondary school children (n=615) who were interviewed completed the SCQ. Children were excluded from the analysis where there were inconsistent responses because they had not followed the routing of the questions within the SCQ or between the interview and the SCQ.

Purchasing of food or drinks by children on the way to or from school

- 32% of primary and 55% of secondary school children reported walking/cycling past places selling food or drinks.
- 16% of primary and 42% of secondary school children from the whole sample, irrespective of whether they walk/cycle past places selling food or drinks (i.e. those with and without access), reported purchasing food or drinks at these times.

Primary and secondary school children from more deprived areas reported that they were more likely to walk/cycle past places selling food or drinks on the way to or from school. The sample size of those who walked/cycled past places selling food and drinks was not sufficient to compare the percentage of children purchasing food or drinks by deprivation. However, considering all children (i.e. those with and without access) it was found that those from more deprived areas were more likely to purchase food or drinks on the way to or from school.

The main reason given by primary school children for never purchasing food or drinks was that they were not allowed to do so, while the most common reason amongst secondary school children was that they were not hungry or thirsty.

Purchasing of food or drinks outside of school at break times or lunchtime by secondary school children

- 73% and 97% of children reported having access to places selling food or drinks outside of school at break time and lunchtime, respectively.
- 18% and 63% of the whole sample (i.e. those with and without access to places selling food or drinks outside of school) reported purchasing food or drinks outside of school at break time or lunchtime, respectively.

Children from more deprived areas and children in the middle years of secondary school (S3-4) were more likely to purchase food or drinks outside of school at lunchtime. At break time there was no difference by deprivation, but purchasing at break time was more common among older children and boys rather than girls. Common reasons given for purchasing food or drinks outside of school at lunchtime (from the places they say that they most often buy food or drink) were that there was a wider choice of food and that they preferred the taste of the food and drinks that they could buy outside of school. Price and perceived value for money were also reported as being important factors.

Supermarkets were the place that children reported they most frequently bought food or drinks from at lunchtime, and less than 5% of children said that burger, ice-cream or chip vans in the vicinity of the school were the places from which they most frequently purchased food or drinks at lunchtime. Confectionery, non-diet soft drinks, crisps and water were the items most commonly purchased.

Conclusions

The proportion of primary school children purchasing food or drinks on the way to or from school was relatively small, but this does not necessarily reflect consumption as the FPM only asked about food or drink purchased by children for themselves. Children from more deprived areas were more likely to purchase food or drinks on the way to or from school, but they were also more likely to pass places selling food or drinks. Purchasing at lunchtime was more common among secondary school children from more deprived areas but no differences by deprivation were found at break time. It is unclear whether access to places that sell food and drinks fully explains the higher proportions of children who purchased something.

The food and drinks purchased outside school tended to be high in non-milk extrinsic sugars (NMES) and saturated fatty acids, which are subject to dietary targets that children in Scotland are failing to meet (see Report Volume 1). A number of strategies will need to be trialled to reduce purchases of these items and to encourage purchasing of healthier food and drinks amongst children.

This is the first survey to collect comprehensive quantitative data on food purchasing 'beyond the school gate' amongst children in Scotland and it provides insights into some of the complex factors which influence children's decisions to purchase food and drinks outside school. Given the prevalence of obesity in children in Scotland and the failure to meet dietary targets for health (see Report Volume 1) the survey provides timely and unique information about this important topic, and the findings can help shape and support future policy efforts to improve the dietary choices of school children in Scotland.

Recommendations

- Further work to develop the methods for exploring the reasons for purchasing food and drinks outside schools is needed. Qualitative research methods would provide a more in-depth understanding of the factors influencing children's purchasing behaviour.
- Research is required to understand what measures need to be taken to encourage healthier food purchases amongst children. This may include assessing the impact of encouraging shops in the vicinity of schools to restrict price offers on certain food and drink items; to stock and promote healthier snack options; and/or to stock smaller portion size options of foods higher in NMES and saturated fatty acids.
- The FPM could be a useful tool to measure purchasing habits of children outside of school in future surveys. It would benefit from further testing in relation to different methods of administering the tool, to reduce the routing errors between the questions, as well as some qualitative and observational research to validate the responses to the questions.
- The reasons why children from more deprived areas were more likely to purchase food or drinks on the way to school is unknown, and it is unclear if this is simply due to more access to places selling food or drinks. This warrants further investigation.

Notes to tables

The following conventions have been used in tables:

1. Both the weighted and unweighted base numbers are presented. Weighted base numbers reflect the relative size of each group in the population whereas unweighted bases represent the actual number of respondents in any specified group.
2. The statistical significance of differences between sub-groups is indicated by the p-value. P-values significant at the 5% level are presented. A p-value ≥ 0.05 is indicated by 'NS' for 'non-significant'.
3. [] are used to indicate small sample sizes, i.e. an unweighted base less than 50. Statistical tests of significance were not carried out if the unweighted base in any cell was less than 50.
4. Row or column percentages may not add exactly to 100% due to rounding.

1. Introduction

1.1 Background

The Survey of Sugar Intake Among Children in Scotland in 2006 and the current 2010 survey (see Report Volume 1) show that children are failing to meet dietary requirements for non-milk extrinsic sugars (NMES) and saturated fatty acids¹. These unhealthy eating patterns are contributing to the high prevalence of obesity among children in Scotland and potentially long term health problems. In an attempt to address the poor dietary intakes of children, in 2007 the Scottish Parliament passed legislation to improve the nutritional quality of food and drinks provided in schools as part of the Schools (Health Promotion and Nutrition) Scotland Act². One aspect of the Act was to enforce strict nutrient standards for the food and drinks provided by the school both at lunchtime and throughout the school day. In addition, it prohibited the sale of specific food items (e.g. confectionery, sugar sweetened drinks) and limited the sale of fried foods and savoury snacks high in salt and fat³. With this now in place in both primary and secondary schools in Scotland attention is turning towards other areas where children's dietary choices can be improved. One such area is buying food and drinks within the vicinity of schools, termed by the Scottish Government as purchases 'beyond the school gate'^{3,4}. Previous work suggests that the opportunity for purchasing food and drinks within the vicinity of the school grounds is high, reporting that on average there are 23 'junk food outlets' in the vicinity of each secondary school in England⁵. A pilot study in two secondary schools in England estimated that 23% of the recommended daily energy intake of children aged 13-17 years came from food bought from shops around schools, and the food and drinks purchased contained 15% of food energy from NMES⁶.

For the Survey of Diet Among Children in Scotland 2010 (FS424019), a new module was designed called the Food Purchasing Module (FPM). The aim was to explore the food and drink purchasing behaviours of children outside of school around the school day. This included purchases made by children on the way to and from school, at break times (including free periods) and at lunchtimes. Prior to this survey, food and drink purchasing habits outside of school on school days had never been measured in a representative national survey of children in Scotland. Previous studies in Scotland were limited to eating and purchasing behaviours of children in specific school years⁷ or used qualitative methods to explore children's views about school meal provision and opportunities to leave school premises at breaks^{8,9}. The FPM represents the first time quantitative data on the broader topic of food purchasing 'beyond the school gate' have been collected.

* for more detail: <http://www.scotland.gov.uk/Resource/Doc/238187/0065394.pdf>

1.2 Relevant initiatives and policies in Scotland

Initiatives and policies aimed at improving the dietary habits of school children in Scotland have focused on food and drinks provided in school, predominantly school meals. Hungry for Success was launched in 2003 to improve the nutritional content and uptake of school meals in Scotland¹⁰. Building on this initiative, the Schools (Health Promotion and Nutrition) Scotland Act was passed in 2007 legally requiring schools to comply with the strict nutritional standards for all food and drinks provided in schools, including tuck shops and vending machines².

At the time of writing this report several government led initiatives were being developed, aimed at creating healthier food environments outside of schools. The Healthy Eating, Active Living Action Plan, which aims to improve diet, increase activity and tackle obesity (2008-2011), refers to the concept of 'beyond the school gate', which focuses on providing healthier options outside of school³. Guidance for local authorities is being developed with the Association of Public Service Excellence and others, to capture examples of the ways that policies and practices on both food and physical activity can help contribute to better health outcomes. This includes guidance for community planning partnerships on provision of lower energy and less energy dense options in the community (e.g. limiting the number of food outlets near schools, leisure centres, parks and youth centres) and encouraging the provision of outlets for healthier convenience food and drinks. Supporting this, one of the action points in the Scottish Government's Obesity Route Map Action Plan to tackle obesity is to *'explore measures to restrict access by children to nutritionally inappropriate meals and high energy dense foods from businesses located in the vicinity of schools'*⁴.

1.3 Aims of the Food Purchasing Module

The overall aim of the FPM was to assess and understand the food and drink purchasing habits outside of school on school days among primary (P4-7) and secondary (S1-S6) school children.

The specific objectives of the research were:

- To assess the opportunities for children to purchase food and drink outside of school.
- To estimate the proportion of children purchasing food and drink outside of school.
- To identify the types of foods and drinks children are purchasing outside of school.
- To explore the factors that influence whether children go outside of school to purchase food or drink.

2. Methods

2.1 Development of the Food Purchasing Module (FPM)

The FPM was developed by the University of Aberdeen, University of Hertfordshire and ScotCen Social Research, in discussion with the Food Standards Agency Scotland. It was designed to assess school children's purchasing behaviour at four time points around the school day: (i) on the way to school, (ii) break time (including free periods), (iii) lunchtime, and (iv) after leaving school.

The questions focused on the opportunities to purchase food or drinks outside school, the type of food or drinks purchased, the reasons for buying or not buying food or drinks outside of school and the places from which food or drinks are purchased. These topics were explored for each of the four time points (described above) for secondary school children, but only on the way to and from school for primary school children as most primary schools do not allow children to leave the school grounds at break times or lunchtime. The majority of primary school children therefore would have very limited opportunities to purchase food or drinks outside of school at these times.

The opportunity to purchase food or drinks on the way to or from school was defined as '*the child walking or cycling past places selling food or drinks on the way to or from school*'. It should be noted that this was based on the child's perception of places rather than an objective assessment. Children who passed places using other modes of transport were not considered as having an opportunity to purchase food or drinks. At break time or lunchtime the opportunity to purchase food or drinks was defined as '*the child being able to get to places outside of school that sell food or drinks*'. Purchasing of food or drinks refers only to the purchases *made by the child for themselves*, and does not include purchases made for them by other people (i.e. bought by parents, guardians or others). The results from this survey on purchasing behaviours should not be extrapolated to consumption as it is unknown whether the food and drinks purchased were actually consumed. The results presented in this report include the percentage of children that '*ever*' purchase food or drinks outside of school, which could be daily or only very occasionally, and therefore does not relate to frequency of purchasing.

Unlike the main survey, the FPM was designed only for children aged 8 years and older (P4 and above) as it was considered that only a minority of children under 8 years old were likely to be making purchases themselves. It was thought that some children may not want their parents/guardians to know about the food or drinks that they purchase and that some questions could be potentially sensitive, therefore a self-completion paper questionnaire (SCQ) was designed to be completed alongside the interview questions for the FPM. The SCQ was initially designed to be completed by all children (8-16 years) and the interview to be conducted with the parent/guardian of primary school children along with the child, and with the secondary school children themselves.

As part of the development of the FPM, cognitive interviewing was carried out to test the interpretation of the questions and the child's ability to follow the instructions and routing of questions in the SCQ. A total of 22 interviews were conducted, five with parents of primary school children, and 17 with primary and secondary school children. Following the cognitive interviewing some changes were made to the wording of questions, but the main changes were made to the delivery of the FPM. The cognitive interviewing revealed that many primary school children had difficulties reading some of the questions in the SCQ and had problems following the routing between the questions. Therefore, it was decided that for primary school children all questions would be incorporated into the computer-assisted personal interview (CAPI) conducted by the interviewer in the main survey interview and primary school children would not be asked to complete the SCQ. Some routing problems were also observed with the secondary school children, mainly due to children not reading or not following the instructions. To try and limit this problem some of the questions were incorporated into the CAPI which would allow the interviewer to help with the routing of questions between the CAPI and SCQ (e.g. to score out irrelevant questions in the SCQ). The routing instructions that remained in the SCQ were highlighted more clearly in the final version of the questionnaire. A full description of the cognitive interviewing process and the observations are given in Appendix A.

Many of the questions in the FPM included a list of possible response options. These lists were developed using expert knowledge of this area and published literature/reports. Options and wording were amended following feedback from children during the initial piloting (see Report Volume 1) and cognitive interviewing. Children were also given the option in certain questions to provide other responses to those available, but very few children chose to do this.

2.2 The Food Purchasing Module used in the Survey

The FPM was delivered as part of the main interview for the Survey of Diet Among Children in Scotland 2010 (FS424019) and as described above comprised questions in the form of a CAPI (see Appendix B) and SCQ (see Appendix C). The fieldwork was carried out by ScotCen Social Research between June and November 2010. For interviews conducted during the school holidays, the children were asked to provide the information based on their last school term.

2.2.1 Computer-assisted personal interview

For primary school children in P4-7 all the FPM questions were asked by an interviewer as part of the CAPI, which eliminated the chance of any routing errors between questions. For primary school children, questions regarding the purchasing of food or drinks were limited to 'on the way to school' and 'on the way home from school'.

For secondary school children, the questions were divided between the CAPI and SCQ and included purchases at each of the four time points across the school day. Questions regarding opportunities to purchase food or drink, purchasing of food or drink on the way to or from school and rules about leaving the school grounds during the school day were all asked in the CAPI.

2.2.2 Self completion questionnaire for secondary school children

Based on the responses to the questions in the CAPI, the child was guided by the interviewer to complete the appropriate questions in the SCQ. For example, if the child answered in the CAPI that they did not purchase food or drink on the way to school then the interviewer was instructed to score out the section in the SCQ that asked about the food or drinks purchased on the way to school. In the SCQ the children were asked about the types of food and drinks they purchased, the reasons for buying or not buying food or drinks and whether they told their parents about their purchases. Children were asked if they purchased food or drinks outside of school at lunchtime or break time in the SCQ rather than the CAPI because it was thought that these questions may be sensitive as some parents may not be aware that their child purchases food or drink outside school at these times.

2.3 The survey sample

The main survey aimed to achieve a sample size of 1500 children, representative of the population aged 3-16 years, residing at addresses in Scotland. It was estimated (using past surveys) that parents of 3000 children needed to be contacted to meet this target. The sample was required to be representative of children living in Scotland with respect to sex, ethnicity, urban-rural distribution and age distribution. The sample was drawn from the Child Benefit records held by HM Revenue and Customs (HMRC) in two stages. At the first stage, 127 postcode sectors were sampled with probability proportional to the number of eligible children within them. At the second stage, 24 eligible children were sampled from each selected postcode sector. This gave a sample of 3048 children aged between 3 and 16 years on 12th July 2010. One child per household was selected. Prior to selection, HMRC excluded any children that were flagged on their files as sensitive cases. More detail of the survey methodology can be found in Volume 1 of the Survey of Diet Among Children in Scotland 2010 report (FS424019).

All children in the school years P4-7 and S1-6 were eligible to complete the FPM. For children who were interviewed during the summer holidays, the school year referred to their previous year at school (i.e. if they were in P4 before the start of the holiday they were included). Children in P1-3 were excluded from the FPM.

2.4 Data analysis

Data analysis was carried out using IBM SPSS Statistics version 19.0. (SPSS Inc., an IBM Company, USA). The analysis was carried out separately for children in primary school and secondary school because of differences in the school environments which might influence purchasing behaviours. The frequency distribution and the tests of association between groups (i.e. χ^2 test) were carried out using the Complex Samples option in SPSS to take account of the sample design and response.

As the overall prevalence of purchasing was unknown at the time the study was designed, it was not possible to estimate in advance what size of sample would be required to yield sufficient numbers of children making purchases who could be asked more detailed follow-up questions. Sub-group comparisons were made by sex, school year and Scottish Index of Multiple Deprivation (SIMD) quintiles, but comparisons between sub-groups were sometimes limited by small numbers.

2.4.1 Weighting

The non-response to the FPM SCQ within the interview was very low, and therefore separate weights from those used in the main survey were not needed (see Report Volume 1).

2.4.2 Exclusions based on routing errors

When routing errors between questions or inconsistencies in responses occurred, the respondent was excluded from the analysis from the point at which the routing error occurred. For example if they said that they did not purchase food or drinks on the way to school but then completed the questions related to purchasing food or drinks on the way to school, the data for that child was excluded as it was not possible to identify the correct response.

2.5 Ethics approval

Ethics approval for the main study was obtained from the NatCen Social Research Ethics Committee (Application: P7070 Scottish Children's Diet Survey 2010) (see Appendix I in report Volume 1). Ethics approval for the cognitive testing of the FPM, conducted by researchers at the University of Aberdeen, was granted by the University of Aberdeen's College Ethics Review Board (CERB/2010/2/498) (see Appendix A).

3. Response

3.1 Response to the FPM

The overall response to the Survey of Diet Among Children in Scotland 2010 (FS424019) is described in Volume 1 of the report. Of the 3048 children invited to take part in the main survey, 1906 completed the interview. All primary school children eligible for this part of the survey (P4-7) completed the FPM (n=564).

All secondary school children were asked to complete a paper-based SCQ in addition to answering questions incorporated in the CAPI. Tables 3.1, 3.2 and 3.3 show the response rates for the SCQ in secondary school children, by sex, Scottish Index of Multiple Deprivation (SIMD) quintile and urban/rural classification respectively. The response rates are based on all those participating in the interview. Overall, response was high at 93% (Table 3.1). There were no significant differences in response by sex or SIMD quintile (Table 3.2). There was also little difference in response between urban/rural areas (Table 3.3).

Tables 3.1, 3.2 and 3.3

3.2 Sample included in the FPM data analysis

Figure 3.1 shows the sample included in the data analysis of the FPM[†]. Several inconsistencies were found in the data for secondary school children where the correct routing was not followed either between the CAPI and the SCQ, or within the SCQ. Respondents with errors in the routing of questions were excluded from the data analysis. These are referred to as 'routing errors' in Figure 3.1.

Figure 3.1

[†] Note that those children who were at boarding school (n=3) were excluded from the analysis as the questions relating to travelling to and from school were not relevant.

Figure 3.1 Sample included in the FPM data analysis (unweighted sample)

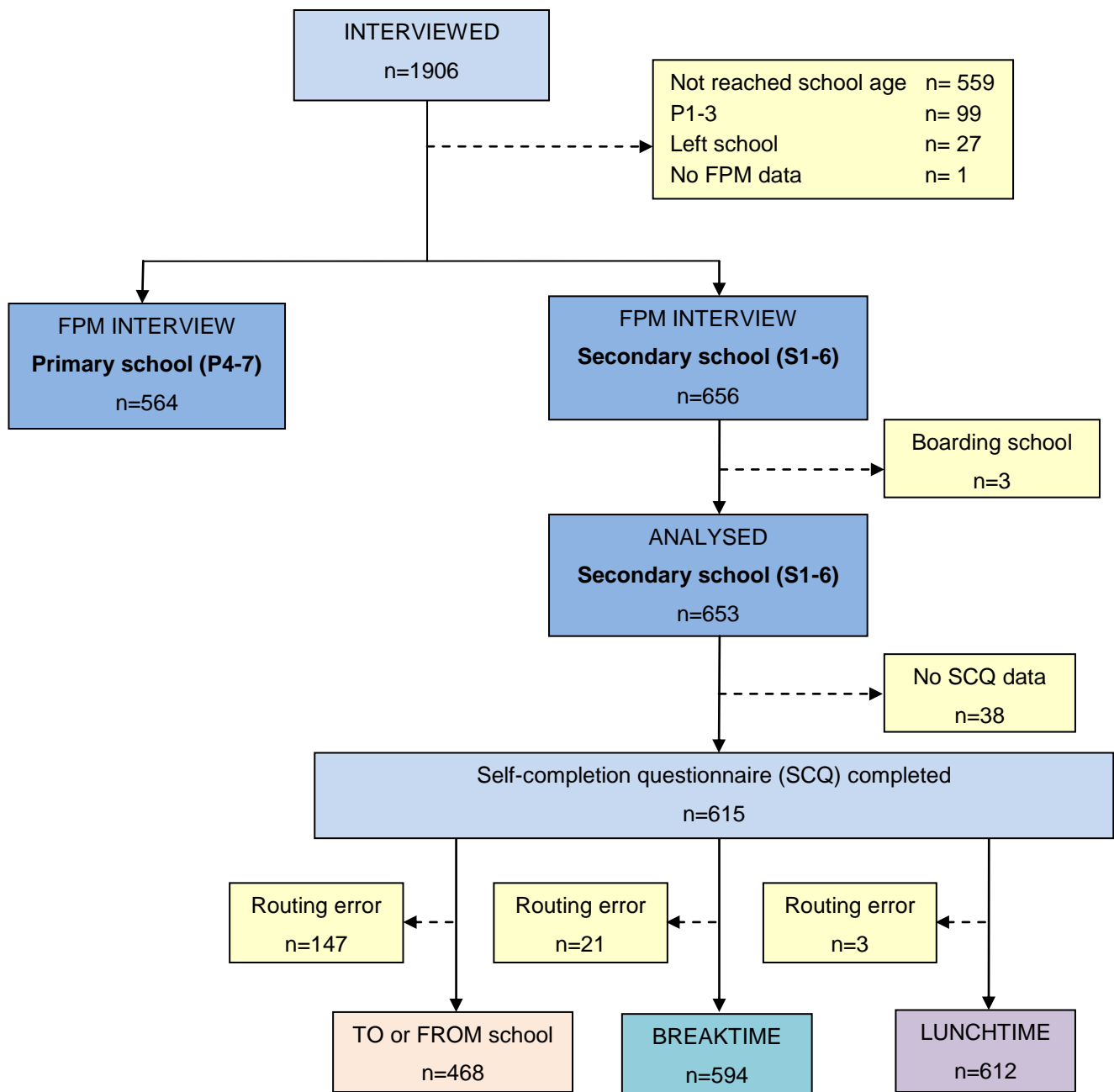


Table 3.1 Response to self-completion questionnaire (based on those responding to interview), by sex

	Both boys & girls	Boys	Girls	<i>p</i> ¹
	%	%	%	
Self-completion questionnaire	93	93	94	NS
<i>Bases (unweighted)</i>	656	330	326	

¹P-value for the association between sex and response

NS, non-significant

Table 3.2 Response to self-completion questionnaire (based on those responding to interview), by SIMD quintile

	5 th (least deprived)	4 th	3 rd	2 nd	1 st (most deprived)	<i>p</i> ¹
	%	%	%	%	%	
Self-completion questionnaire	92	96	92	95	93	NS
<i>Bases (unweighted)</i>	164	152	108	110	122	

¹P-value for the association between SIMD quintile and response

NS, non-significant

Table 3.3 Response to self-completion questionnaire (based on those responding to interview), by urban/rural classification

	Large urban areas	Other urban areas	Accessible small towns	Remote small towns	Accessible rural	Remote rural
	%	%	%	%	%	%
Self-completion questionnaire	92	96	92	[92]	94	[95]
<i>Bases (unweighted)</i>	257	196	71	13	79	40

4. Opportunities for children to purchase food and drinks outside of school on school days

This section of the report describes the opportunities that children had to purchase food or drinks outside of school on school days. Opportunity was defined as '*walking or cycling past places that sell food or drink on the way to or from school*', and '*having access to places that sell food or drink outside school at break time (or free periods) or at lunchtime*'. Access to places outside of school is based on the child's perception of accessibility rather than an objective assessment of access. Children in primary school were only asked about opportunities to purchase food or drinks on the way to and from school.

Summary

Transport to and from school

- The most common mode of transport to and from school for both primary and secondary school children was walking or cycling. Walking or cycling was more common among primary school children from more deprived areas, but did not differ by deprivation level for secondary school children.

Opportunities to purchase food or drinks outside of school

- 32% of primary and 55% of secondary school children reported walking or cycling past places selling food or drinks on the way to or from school. Children from more deprived areas were more likely to report walking or cycling past places selling food or drinks than those from less deprived areas.
- 97% of secondary school children reported that they had access to places selling food or drinks outside of school at lunchtime and 73% had access to such places at break time.

4.1 Proportion of children passing places that sell food and drinks on the way to or from school

Children often use more than one mode of transport on their journey to or from school, e.g. walk then take a bus; therefore they were asked about the mode of transport that they used to travel *most* of the distance. Figure 4.1 shows the different modes of transport used to travel most of the distance to and from school. Walking or cycling was the most common mode of transport for both primary and secondary school children, followed by car or taxi for primary school children and school bus for secondary school children. The proportion of primary school children walking or cycling to or from school was significantly higher among children from areas with higher deprivation. The proportion of secondary school children walking or cycling to or from school did not differ by level of deprivation (Table 4.1).

Figure 4.1
Table 4.1

Figure 4.1 Mode of transport used to travel most of the way to and from school, by age group

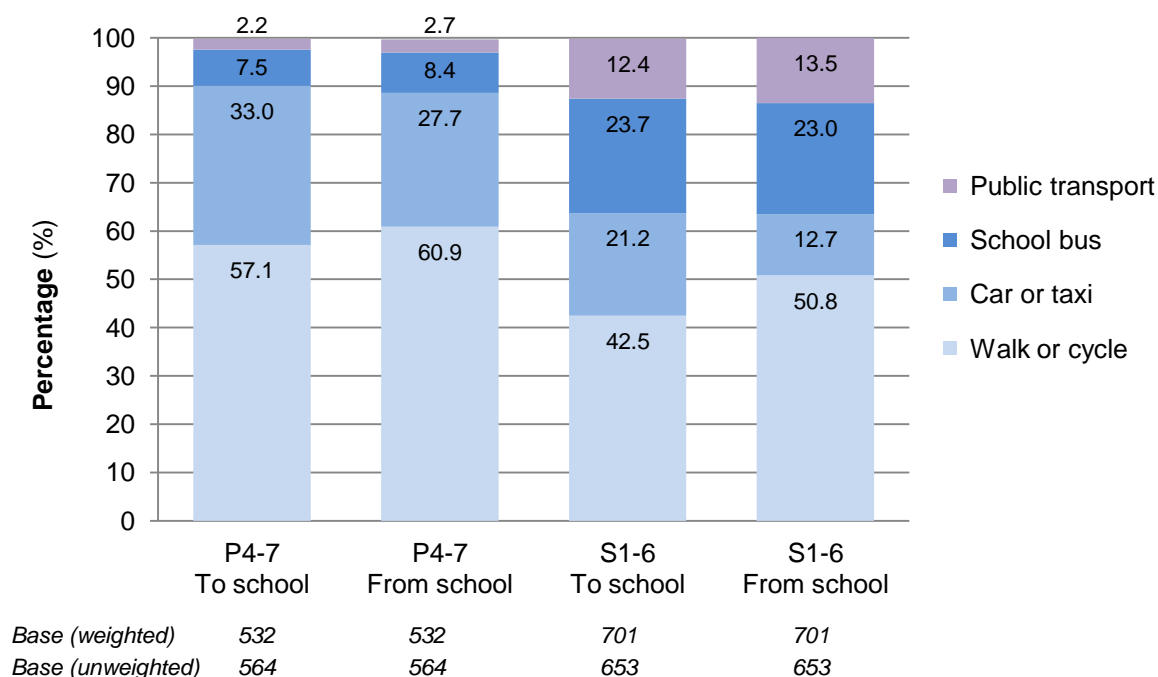


Table 4.2 shows the proportion of children with opportunities to buy food or drinks (i.e. those who walk or cycle past places selling food or drinks) either on the way to or from school by sex, school year and SIMD quintile. Thirty two percent of primary school children and 55% of secondary school children reported walking or cycling past places that sell food or drinks either on the way to or from school. Both primary and secondary school children in the more deprived areas reported that they were more likely to pass places selling food or drinks, but there were no significant differences between boys and girls or by school year.

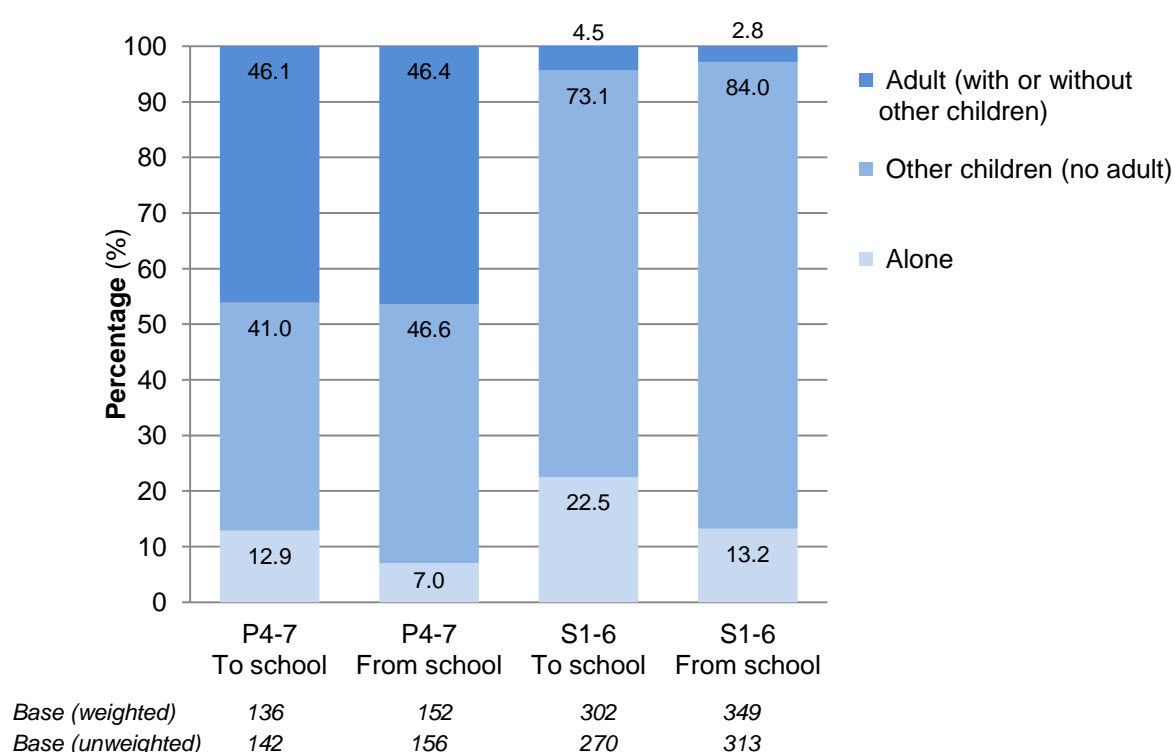
Table 4.2

4.2 People accompanying children when they pass places that sell food and drinks on the way to and from school.

Figure 4.2 shows who accompanies the child when they walk or cycle past places selling food or drinks on the way to and from school. Secondary school children are most likely to be accompanied by other children (and no adult), while primary school children are equally likely to be accompanied by an adult or by other children (and no adult).

Figure 4.2

Figure 4.2 People accompanying children as they pass places selling food or drinks on the way to and from school, by age group



4.3 Opportunities for secondary school children to purchase food and drinks outside of school at break time and at lunchtime

Seventy three percent of secondary school children reported that they could access places outside of school selling food or drinks at break time (or free periods), although only 36% of children said that their school rules allowed them to leave the school grounds at these times. At lunchtime, 97% of secondary school children reported that they could access places to buy food or drinks outside of school and 87% said that school rules allowed them to leave the school grounds at lunchtime.

Table 4.1 Proportion of children walking or cycling most of the way to and from school, by SIMD quintile

	All	5 th least deprived	4 th	3 rd	2 nd	1 st most deprived	<i>p</i> ¹
	%	%	%	%	%	%	
Primary school (P4-7)							
To school	57.1	51.1	46.9	48.0	64.3	68.9	0.002
From school	60.9	53.5	51.2	55.8	64.3	73.6	0.004
Secondary school (S1-6)							
To school	42.5	46.0	38.6	38.3	45.6	42.8	<i>NS</i>
From school	50.8	58.7	45.3	45.5	52.3	49.9	<i>NS</i>
<i>Base (weighted)</i>							
Primary school	532	124	101	94	97	116	
Secondary school	701	168	152	107	124	150	
<i>Base (unweighted)</i>							
Primary school	564	140	113	101	99	111	
Secondary school	653	164	149	108	110	122	

¹p-values for the association between SIMD quintile and the proportion of children walking or cycling most of the way to/from school

NS, non-significant

Table 4.2 Proportion of children walking or cycling past places that sell food and drinks on the way to or from school

	All	Sex		p^1	School year					p^2	SIMD quintile					p^3
		Boys	Girls		P4 or S1	P5 or S2	P6 or S3	P7 or S4	S5/6		5 th least deprived	4 th	3 rd	2 nd	1 st most deprived	
	%	%	%		%	%	%	%	%		%	%	%	%	%	
Primary (P4-7)	31.6	32.1	31.0	NS	30.7	30.2	27.7	38.1	-	NS	25.9	24.6	31.0	39.8	37.3	0.039
Secondary (S1-6)	55.4	55.7	55.1	NS	49.6	55.5	50.8	62.2	59.4	NS	49.4	43.6	47.0	65.5	71.9	<0.001
<i>Base (weighted)</i>																
Primary (P4-7)	532	280	252		123	140	139	130	-		124	101	94	97	116	
Secondary (S1-6)	701	355	346		139	125	154	143	140		168	152	107	124	150	
<i>Base (unweighted)</i>																
Primary (P4-7)	564	308	256		131	151	145	137	-		140	113	101	99	111	
Secondary (S1-6)	653	328	325		141	127	152	124	109		164	149	108	110	122	

¹p-values for the association between sex and the proportion of children

²p-values for the association between school year and the proportion of children

³p-values for the association between SIMD quintile and the proportion of children

NS, non-significant

5. Food or drink purchases made by children outside of school on school days

This section describes the actual purchasing of food and drinks outside of school on school days. Purchases refer only to food or drink bought by the child for themselves and does not include items bought for them by other people. The data describe purchasing habits, which may not necessarily reflect consumption patterns. The comparison in this section of the report is made between children who reported that they *ever* purchased items (“*do you ever purchase food or drinks?*”) and those who report that they *never* purchased food or drinks outside of school on school days. The category of ‘*ever*’ purchased food or drinks does not reflect the frequency of purchasing, which is likely to be highly variable and therefore should not be interpreted, for example, as the prevalence of children purchasing every day.

Summary

- 16% of all primary and 42% of all secondary school children in the survey reported that on occasions they purchased food or drinks on the way to or from school. Of those who pass places selling food or drinks, 49% of primary and 69% of secondary school children reported making purchases.
- Including all children in the survey (i.e. those with and without the opportunity to purchase food and drinks) it was found that children from more deprived areas were more likely to report purchasing food or drinks on the way to or from school.
- 18% of all secondary school children in the survey reported purchasing food or drinks outside of school at break time (or free periods). This was more common among boys and older children, but there was no difference by deprivation.
- 63% of all secondary school children in the survey reported purchasing food or drinks outside of school at lunchtime. Purchasing was more common among children from more deprived areas and children in school years S3-4 (13-15y).
- Across the whole day the most commonly purchased food and drinks outside of school by secondary children were confectionery and non-diet soft drinks. 17% of children bought these items every day and 56% and 45% of children respectively purchased these items at least once a week.
- Newsagents, grocery/corner shops and supermarkets were the range of places from which children reported that they usually purchased food or drink on the way to or from school. At lunchtime the most common places were newsagents, supermarkets and sandwich shops/bakeries.
- The place from which secondary school children reported *most frequently* buying food or drinks at lunchtime was supermarkets. Less than 5% of children bought food or drinks most frequently from burger, chip or ice-cream vans.

5.1 Children purchasing food and drinks on the way to or from school

Table 5.1 shows the proportion of children who reported buying food or drinks either on the way to or from school by sex, school year and SIMD quintile. The data are presented for:

- (i) only those children who report having access to food and drink outlets (i.e. they walk or cycle past places selling food or drink)
- (ii) for *all* children in the survey, which includes those with and without the opportunity to make purchases (i.e. do not walk or cycle past places selling food or drinks).

Of all the children in the survey (i.e. those with and without the opportunity to purchase), 42% of all secondary and 16% of all primary school children reported that they sometimes purchased food or drinks on the way to or from school. Of the children with access to places selling food or drinks, 69% of secondary school children and 49% of primary school children reported that they sometimes purchased food or drinks on the way to or from school. Among secondary school children there was no difference between boys and girls or by school year of those purchasing food or drinks. In contrast, purchasing food or drinks on the way to or from school was more common among boys than girls in primary schools, when the whole sample was considered. The sample was too small for statistical testing of differences by school year among only those children with the opportunity to buy food or drinks.

The sample size by level of deprivation (SIMD quintiles) for primary and secondary school children who walked/cycled past places selling food or drinks on the way to or from school was too small for statistical testing. Based on the whole sample, the purchase of food or drinks was more common among primary and secondary school children from areas with higher levels of deprivation. Children from areas of higher deprivation were also more likely to walk or cycle past places selling food or drinks on the way to or from school (see Table 4.2).

Table 5.1

5.2 Proportion of secondary school children purchasing food and drinks at break time (or free periods) or at lunchtime

Table 5.2 shows the proportion of secondary school children who ever purchased food or drink outside of school at break time (or free periods) and at lunchtime by sex, school year and SIMD quintile. The data are again presented for:

- (i) only those children who reported having access to places near to the school selling food or drinks
- (ii) for *all* children in the survey, which includes those with and without access.

Twenty four percent of secondary school children with access to places selling food and drinks outside of school at break time reported purchasing food or drink (18% of all secondary school children). Boys were more likely than girls to purchase food or drinks outside of school at break time and the proportion of children buying food or drinks increased with age, but there was no association with deprivation.

Since the majority of children had access to places outside of school at lunchtime, the differences between those with access and the whole sample were very small. Sixty three percent of children said that they purchased food or drinks outside school at lunchtime. The proportion buying food or drinks at lunchtime was highest for children in school years S3-4 (13-15y) and increased with deprivation, but did not differ between boys and girls.

Table 5.2

5.3 The types of food and drink purchased by secondary school children outside of school during the school day

Data on the foods and drinks purchased by primary school children outside school on the way to school in the morning and on the way home from school in the afternoon were not analysed because the number of primary school children who reported purchasing food was relatively small (see section 5.1).

Table 5.3 shows the percentage of all secondary school children buying the different types of food and drinks specified in the questionnaire outside of school at any of the four time points across the school day and then at lunchtime only. The SCQ presented children with a list of foods (as presented in Table 5.3, and see Appendix C). For each one, children were asked to indicate in a typical week on how many days they usually purchased the item on the way to and from school, at break time (or free periods) or at lunchtime.

Confectionery and non-diet soft drinks were the most commonly purchased items across the whole day. They were reported to be bought at least once a week by 56% and 45% of children respectively and everyday by 17% of children. Less than a third of the children reported purchasing cereal bars, biscuits or cakes, fruit, and fruit juice or smoothies.

At lunchtime, confectionery and non-diet soft drinks were the most commonly purchased items. Confectionery was purchased at least once a week by 42% of children (7% bought it every day) and non-diet soft drinks were bought at least once a week by 37% (8% bought it every day). Other food items purchased at least once a week at lunchtime included sandwiches (36%), pizza, chips, pies, sausage rolls or burgers (36%) and crisps (29%). Fruit was bought by fewer children (20%).

Table 5.3

5.4 Places from which children purchase food or drinks outside of school during the school day

Table 5.4 shows the range of places from which secondary school children reported buying food or drinks outside of school during the school day. Newsagents, grocery/corner shops and supermarkets were the most common places from which children reported buying food or drinks. Only 16% of secondary school children reported purchasing food or drink at lunchtime from burger, chip or ice-cream vans and 2% made purchases from healthy food vans*, compared with over 40% of children buying food or drinks from newsagents, supermarkets and sandwich shops.

In addition to describing the range of places from which they usually bought food or drinks (for which they could give more than one answer), they were asked to state the one place from which they *most frequently* purchased food or drinks at lunchtime. Table 5.5 shows the places from which children said that they *most frequently* purchased food or drink at lunchtime. Supermarkets were the place from which children said that they most frequently purchased food or drinks at lunchtime (25%), followed by sandwich shops or bakeries (19%) and takeaways (17%). Less than 5% of children said that burger, chip or ice-cream vans were the place from which they most commonly purchased food or drinks at lunchtime.

The number of primary school children purchasing food or drink on the way to or from school was considered too small to include a full breakdown of the places from which purchases were made, but the trends were similar to secondary school children, with the common places being newsagents and supermarkets.

Table 5.4 and 5.5

* Healthy food vans sell food that meet the same nutrient standards as schools and were introduced in Fife as part of a pilot project in 2010 to reduce the problem of overcrowding and queuing in school canteens (<http://old.schoolfoodtrust.sft.live.cimex.com/casestudy-detail.asp?caseid=127>)

Table 5.1 Proportion of children purchasing food or drinks either on the way to or from school

	All	Sex		p^1	School year					p^2	SIMD quintile					p^3
		Boys	Girls		P4 or S1	P5 or S2	P6 or S3	P7 or S4	S5/6		5 th least deprived	4 th	3 rd	2 nd	1 st most deprived	
	%	%	%		P4	P5	P6	P7			%	%	%	%	%	
Primary (P4-7)					P4	P5	P6	P7								
<i>With access⁴</i>	48.9	59.3	37.0	0.002	[37.2]	[50.2]	[35.2]	67.6	-	n/a	[36.5]	[50.6]	[45.8]	[45.7]	[62.2]	n/a
<i>All children</i>	15.5	19.1	11.5	0.004	11.4	15.2	9.7	25.8	-	0.003	9.5	12.4	14.2	18.2	23.2	0.025
Secondary (S1-6)					S1	S2	S3	S4	S5/6							
<i>With access⁴</i>	69.0	69.8	68.1	NS	74.8	66.8	67.9	72.3	63.2	NS	67.1	74.4	[63.9]	63.5	73.0	n/a
<i>All children</i>	42.1	42.8	41.3	NS	40.5	40.6	36.3	50.0	42.9	NS	36.9	36.9	34.1	41.7	57.4	0.018
<i>Base (weighted)</i>																
<i>P4-7 with access</i>	168	90	78		38	42	39	49	-		32	25	29	38	43	
<i>All P4-7 children</i>	532	280	253		123	140	139	130	-		124	101	94	97	116	
<i>S1-6 with access</i>	308	158	149		55	55	59	73	65		63	55	36	65	89	
<i>All S1-6 children</i>	505	259	246		102	90	111	106	96		115	111	67	99	113	
<i>Base (unweighted)</i>																
<i>P4-7 with access</i>	173	95	78		39	45	38	51	-		36	28	30	38	41	
<i>All P4-7 children</i>	564	308	256		131	151	145	137	-		140	113	101	99	111	
<i>S1-6 with access</i>	277	140	137		56	52	57	61	51		61	52	36	57	71	
<i>All S1-6 children</i>	468	235	233		104	90	108	92	74		113	108	68	88	91	

¹p-values for the association between sex and the proportion of children

²p-values for the association between school year and the proportion of children

³p-values for the association between SIMD quintile and the proportion of children

⁴ This analysis includes only those children who stated that they had access to places selling food or drinks on to way to or from school

NS, non-significant

n/a, not appropriate (at least 1 sub-group has unweighted base <50)

Table 5.2 Proportion of secondary school (S1-6) children purchasing food or drinks outside school at breaktime (or free periods) and at lunchtime

	All	Sex			School year						SIMD quintile					
		Boys	Girls	p^1	S1	S2	S3	S4	S5/6	p^2	5 th	4 th	3 rd	2 nd	1 st	p^3
	%	%	%		%	%	%	%	%		least deprived				most deprived	
Breaktime or free periods																
<i>With access⁴</i>	23.8	31.9	15.4	<0.001	18.7	14.0	25.2	24.8	33.3	0.042	18.4	24.7	30.3	25.6	22.8	NS
<i>All children</i>	18.0	24.2	11.7	<0.001	12.6	11.1	17.6	19.2	28.5	0.009	13.5	17.3	20.7	20.7	19.6	NS
Lunchtime																
<i>With access⁴</i>	63.0	66.5	59.3	NS	49.2	52.8	70.5	71.5	63.2	0.002	52.6	60.5	63.0	64.0	76.0	0.015
<i>All children</i>	62.6	66.1	59.1	NS	48.9	57.3	69.8	71.5	63.2	0.002	52.0	60.5	62.5	63.2	76.0	0.011
<i>Base (weighted)</i>																
<i>Breaktime or free periods</i>																
<i>With access⁴</i>	484	244	240		86	88	94	106	110		110	102	68	89	115	
<i>All children</i>	638	323	316		127	111	135	137	129		150	146	99	110	134	
<i>Lunchtime</i>																
<i>With access⁴</i>	654	330	323		127	112	141	141	133		152	148	99	115	140	
<i>All children</i>	657	333	325		128	113	143	141	133		154	148	100	116	140	
<i>Base (unweighted)</i>																
<i>Breaktime or free periods</i>																
<i>With access⁴</i>	443	221	222		86	88	91	93	85		106	99	67	78	93	
<i>All children</i>	594	297	297		130	113	132	119	100		146	143	99	98	108	
<i>Lunchtime</i>																
<i>With access⁴</i>	608	304	304		130	113	139	122	104		148	145	99	103	113	
<i>All children</i>	612	306	306		131	115	140	122	104		150	145	100	104	113	

¹p-values for the association between sex and the proportion of children

²p-values for the association between school year and the proportion of children

³p-values for the association between SIMD quintile and the proportion of children

⁴This analysis includes only those children who stated that they had access to places selling food or drinks at breaktime or at lunchtime

NS, non-significant

Table 5.3 Food and drinks purchased outside school across the day and at lunchtime by all secondary school (S1-6) children

	At any time across the day		At lunchtime	
	At least	At least	At least	At least
	once a week	once a day	once a week	once a day
	%	%	%	%
Hot or cold sandwiches, filled rolls or baguettes	39.3	8.8	36.1	6.3
Pizza, chips, pies, sausage rolls or burgers	38.7	6.1	35.7	3.0
Cereal bars, biscuits or cakes	26.6	4.0	17.9	0.4
Confectionery ¹	55.5	16.5	42.4	6.6
Crisps	40.4	9.3	28.5	3.3
Fruit	28.4	7.0	19.8	2.7
Pure fruit juice or smoothies	25.4	7.2	18.3	1.8
Non-diet soft drinks	44.8	17.4	37.1	7.8
Diet soft drinks	38.1	14.1	31.3	5.4
Water	42.3	13.3	30.5	4.6
<i>Base (weighted)</i>				
Hot or cold sandwiches, filled rolls or baguettes	407	407	647	647
Pizza, chips, pies, sausage rolls or burgers	407	407	643	643
Cereal bars, biscuits or cakes	405	405	638	638
Confectionery ¹	406	406	636	636
Crisps	408	408	641	641
Fruit	401	401	633	633
Pure fruit juice or smoothies	402	402	633	633
Non-diet soft drinks	404	404	638	638
Diet soft drinks	403	403	641	641
Water	406	406	639	639
<i>Base (unweighted)</i>				
Hot or cold sandwiches, filled rolls or baguettes	381	381	602	602
Pizza, chips, pies, sausage rolls or burgers	381	381	600	600
Cereal bars, biscuits or cakes	378	378	593	593
Confectionery ¹	387	387	592	592
Crisps	379	379	597	597
Fruit	375	375	590	590
Pure fruit juice or smoothies	375	375	590	590
Non-diet soft drinks	377	377	595	595
Diet soft drinks	375	375	596	596
Water	378	378	595	595

¹Includes sweets, chocolate, ice-cream or ice-lollies

Table 5.4 The range of places from which secondary school children purchase food or drinks on the way to and from school and at lunchtime

	To school	From school	Lunchtime
	%	%	%
Newsagent or sweet shop	48.5	49.2	49.0
Grocery or corner shop	25.5	23.0	27.8
Supermarket	18.0	20.7	41.1
Sandwich shop or bakery	6.8	7.3	42.4
Takeaway, chip shop, fast food outlet	1.0	6.7	36.5
Burger, chip or ice-cream van	5.4	3.2	16.3
Café, coffee shop or restaurant	2.1	2.0	15.0
Garage or petrol filling station	1.8	7.7	12.0
Swimming pool sports centre or community	0.0	0.9	3.5
Healthy food van	0.0	1.2	2.2
Chemist	0.0	0.0	1.5
Other (butcher, post office, hospital, hotels)	2.6	0.0	2.8
<i>Base (weighted)</i>	<i>114</i>	<i>145</i>	<i>408</i>
<i>Base (unweighted)</i>	<i>98</i>	<i>131</i>	<i>374</i>

Table 5.5 The places from which secondary school children *most frequently* purchase food or drinks at lunchtime

	Lunchtime
	%
Newsagent or sweet shop	12.2
Grocery or corner shop	8.6
Supermarket	25.4
Sandwich shop or bakery	19.3
Takeaway, chip shop, fast food outlet	17.2
Burger, chip or ice-cream van	4.3
Café, coffee shop or restaurant	5.9
Garage or petrol filling station	2.2
Swimming pool sports centre or community	0.7
Healthy food van	0.5
Chemist	0.0
Other	3.8
<i>Base (weighted)</i>	<i>283</i>
<i>Base (unweighted)</i>	<i>262</i>

6. Factors influencing children's purchase of food or drinks outside of school on school days

This section describes some of the factors that influence why children buy food or drinks outside of school, as well as why children who have the opportunity to purchase food or drinks outside of school choose *not* to purchase anything. The lists of possible reasons for purchasing or not purchasing food or drink and the reasons for leaving the school to do so were initially developed using expert knowledge and existing literature, and then amended following feedback from children during the initial piloting and cognitive interviewing. Children could also opt to write in other reasons; very few did this.

Summary

- The most common reasons given by secondary school children for why they purchased food or drinks outside of school at lunchtime (from the places they say they most often buy food or drink) were because there was a wider choice of food or drinks, they like the taste of food or drinks they sell and the outlets were seen as being close to the school.
- The most common reasons given by secondary school children for *not* purchasing food or drinks outside of school at lunchtime were that they brought food or drinks from home or purchased food or drinks in school. Less than 10% said that a lack of money prevented them from buying food or drinks outside of school.
- 6% of secondary school children said their parents sometimes or always told them what to buy at lunchtime, while 16% said parents told them what *not* to purchase.
- Almost half of all primary school children with access to places selling food or drinks did *not* purchase food or drinks on the way to or from school because they were not allowed to. For secondary school children the most common reasons given for *not* purchasing food or drinks on the way to or from school were that they were not hungry or thirsty, or they did not have enough money.

6.1 Reasons why secondary school children purchase food or drinks outside of school at lunchtime

Table 6.1 shows the reasons given by secondary school children for purchasing food or drinks outside of school at lunchtime (from the places that they say they most often buy food or drink) and why they choose to leave the school grounds to do so.

Children were asked to think about the place from which they most often bought food or drink at lunchtime; the most common reasons given for buying food or drinks outside of school at these places were related to the type of food or drinks that could be purchased: availability of a wider choice of food or drinks (54%) and preference for the taste of the food or drinks available (50%). Proximity of places to the school was an important factor in deciding whether to purchase food outside of school (45%) as was whether they thought food or drinks bought outside of school was good value for money (44%).

The most common reasons given by secondary school children for leaving the school grounds at lunchtime were to be with their friends (44%) and that they could not get the type of food or drinks that they wanted in school (40%). Having to queue in the school canteen, not liking school lunches and not liking the canteen were reasons given by 38%, 35% and 27% of children respectively. The cost of food and drinks in the canteen was a less common reason reported by children, and not being supervised by adults or being given more respect in shops were each cited by <5% of children.

Table 6.1

6.2 Parental input into secondary school children's purchasing choices at lunchtime

Children were asked about parental influences on their purchasing choices at lunchtime. Six percent of secondary school children said that their parents/guardians would sometimes or always tell them what food or drink to purchase at lunchtime and 16% reported that parents/guardians sometimes or always told them what *not* to purchase. Forty six percent of children said they sometimes or always told their parents what food or drinks they purchased at lunchtime. It should be noted that the percentage of children who tell their parents what food they buy will be influenced by whether their parents ask them about what food they buy. Therefore, the percentage of children who said they did not tell their parents about their purchases will include some children whose parents did not ask them for this information, as well as those who chose not to provide it.

6.3 Reasons why children *never* purchase food or drinks

6.3.1 Reasons why primary and secondary children who pass places on the way to or from school *never* purchase food or drinks

Table 6.2 shows the reasons children gave for never purchasing food or drinks on the way to or from school. The most common reasons reported by primary school children were because they were not allowed to, they did not have enough money or they were not hungry or thirsty. In contrast, fewer than 10% of secondary school children stated that they were not allowed to purchase food or drinks; for them the most common reasons were that they were not hungry or thirsty, they did not have enough money or that they simply did not want to purchase anything.

Not purchasing food or drinks on the way to school because they were not hungry or thirsty may be partly explained by the fact that the majority of children in both primary (90%) and secondary (78%) schools reported that they eat food at home before school, and only 4% of primary school children and 1% of secondary school children said that they eat their first food of the day at a school breakfast club.

Table 6.2

6.3.2 Reasons why secondary school children who have access to places at break time and at lunchtime *never* purchase food or drinks

Table 6.3 shows the reasons secondary school children gave for never purchasing food or drinks outside of school at break time (or free periods) or at lunchtime. At break time, the main reason children did not purchase food or drinks outside of school was because they brought food from home or they were not hungry or thirsty. At lunchtime, the main reasons were that children brought food from home or they bought food or drinks inside the school. Fewer than 10% of children reported not having enough money or not having enough time as reasons for not purchasing food or drinks outside of school at lunchtime.

Table 6.3

Table 6.1 Reasons why secondary school children purchase food or drinks outside school and choose to leave the school grounds at lunchtime

Why children purchase food or drink outside school at lunchtime (from the places they say that they most often buy food or drink)		Why children leave the school to purchase food or drink at lunchtime	
	%		%
There is a wide choice of food	53.6	Because my friends do	44.2
I like the taste of the food they sell	49.9	Because I can't get the food I want in school	39.5
It is close to the school	45.0	The canteen queue is too long	38.3
It is good value for money	43.5	I want to get out of school	36.2
I can get food there that I can't buy at school	37.9	I don't like school lunches	35.4
My friends buy from the same place	32.5	I don't like the canteen	26.7
I get some exercise	32.5	I like to choose where I spend my money	25.7
I get served quickly	29.8	It's my right to choose where I go and buy my food	24.3
I like the look of food they sell	23.1	The food I want in the canteen runs out too quickly	20.2
The food is healthy	15.3	Canteen food is too expensive	12.3
My parent/guardian tells me where to go	0.6	I want to get a break from other people	5.6
Other	2.1	I get treated with respect at shops outside school	4.1
		So adults can't supervise what I buy	2.0
		Other	6.7
<i>Base (weighted)</i>	403		400
<i>Base (unweighted)</i>	369		367

Note: the percentages do not add to 100% as a child could select more than one reason.

Table 6.2 Reasons why children *never* purchase food or drinks on the way to or from school

	Primary (P4-7)		Secondary (S1-6)	
	To school	From school	To school	From school
	%	%	%	%
I'm not allowed to	46.5	43.7	8.7	0.8
I'm not hungry or thirsty	22.8	9.2	50.4	36.0
I don't have enough money	20.5	36.6	23.4	32.2
I don't want to buy food or drink	19.4	11.3	30.8	27.0
I bring food or drink from home	13.1	4.7	13.9	1.0
I don't have enough time to buy food or drink	11.0	2.0	8.0	5.4
I eat or drinks when I get home	n/a	17.3	n/a	19.9
Other	1.9	7.4	5.2	4.8
<i>Base (weighted)</i>	96	98	118	119
<i>Base (unweighted)</i>	101	101	107	106

Note: the percentages do not add to 100% as a child could select more than one reason.

n/a, not applicable

Table 6.3 Reasons why secondary school children with access *never* purchase food or drinks at break time and at lunchtime

	Breaktime or free periods	Lunchtime
	%	%
I bring food from home	21.6	37.1
I'm not hungry or thirsty	21.6	11.5
I buy food or drink at school	17.0	34.5
I have no time to buy food or drink	12.8	2.9
I don't have enough money	6.3	8.0
There's nowhere nearby to buy food or drink	4.6	1.7
Other	5.0	2.5
<i>Base (weighted)</i>	519	238
<i>Base (unweighted)</i>	490	227

Note: the percentages do not add to 100% as a child could select more than one reason.

7. Discussion and Recommendations

This final chapter reviews the findings from the FPM, the design of the FPM and the implications of the findings for health improvement of children in Scotland and future research

7.1 Findings from the survey

The results from this survey provide an overview of the food and drink purchasing habits of school children in Scotland and an insight into the issue of school children purchasing food and drinks high in fat and/or sugar on the way to and from school and in the vicinity of the school grounds at break times and lunchtime. It should be noted that these data describe food or drinks purchased, but not necessarily all food and drinks consumed.

7.1.1 Food or drink purchasing opportunities and behaviours

Only 16% of all primary school children said that they purchased food or drinks on the way to school or from school. Approximately a third of primary school children said that they walked or cycled past places selling food or drinks on the way to or from school, and of these children, almost half would sometimes purchase food or drinks. These proportions may be an underestimate of the food consumed amongst these children as the question was restricted to only the purchases made by the child and did not include food or drink purchased for them by another person, such as an accompanying adult or friends. This may be a reason why purchases were significantly higher among older primary school children, who may be more likely than younger children to purchase food or drinks themselves. Purchasing was more common among primary school children from more deprived areas, but children from more deprived areas were more likely to walk or cycle past places selling food or drink than those from less deprived areas. Due to the small number of children purchasing food or drinks it was not possible to test whether this association was related to the opportunity to purchase food or drinks.

Secondary school children had the greatest opportunity to purchase food or drink outside of school at lunchtime compared with the other times during the day. Sixty three percent of secondary school children reported that they purchased food or drinks outside of school at lunchtime, compared with 42% on the way to or from school and 18% at break time. As seen among primary school children, purchasing food or drinks on the way to or from school was more common among children from more deprived areas, but again these children were also more likely to walk or cycle past places selling food or drinks. Children from more deprived areas were more likely to purchase food or drinks outside of school at lunchtime but there was no difference in purchasing by deprivation at break time. The proportion of secondary school children in this survey who reported that they purchased food or drinks on the way to or from school was similar to that found in a pilot study in England (50% in England)¹¹. Consistent with the findings of this survey, Mathews *et al.*¹¹ found no differences between boys and girls in the proportion of secondary school children purchasing food or drinks on the way to or from school.

Approximately a half of all secondary school children reported purchasing confectionery or non-diet soft drinks at least once a week (17% of children bought these items everyday), and purchases were most commonly made at lunchtime. This is consistent with previous research in secondary school children, which showed that confectionery, soft drinks and savoury snacks were commonly purchased out of school^{7,11,12}. It was not only food and drinks high in fat, sugar or salt that children purchased, 28% reported buying fruit at least once a week and 42% bought bottled water.

7.1.2 Factors influencing whether children purchase food or drink outside of school

The main reasons given by secondary school children for purchasing food or drinks outside of school at lunchtime from the place they go to most frequently were to get a wider choice of food and that they preferred the taste of the food and drinks they could buy. Since the introduction of the Schools (Health Promotion and Nutrition) Scotland Act 2007² the sale of specific high fat and/or high sugar foods, such as confectionery, sugar sweetened drinks and high fat savoury snacks, cannot be sold in schools and this could be driving some children to purchase these food and drinks elsewhere. Price was an important factor, as almost half of the secondary school children making purchases outside of school at lunchtime reported that they did it because it was good value for money. Other researchers have found that one of the motivations for purchasing food or drinks outside of school is the availability of food on price offers, such as reduced or discounted prices, or savings on multiple purchases (e.g. buy one get one free). Sinclair and Winkler⁶ reported that over a quarter of all purchases made by children aged 13-17 years in the vicinity of schools were available on a price offer. Some of the children in the English study described clubbing together to take advantage of multiple purchase offers. This could have implications for policy in restricting price offers on certain food and drink items in outlets around schools in Scotland.

The choice of outlet used to purchase food or drinks was often based on its proximity to the school. The proximity of 'fast food' takeaway style outlets to schools has been a focus of attention by researchers and government¹³, particularly mobile food vans (e.g. burger vans) that tend to park very close to school grounds. This study showed, however, that newsagents, grocery shops/corner shops and supermarkets were the range of places from which children usually purchased food or drinks, and supermarkets were the places from which they most frequently purchased food or drinks at lunchtime. Restricting the type of outlets around schools would require significant changes in planning regulations, but this would have to cover all outlets and not just takeaways, as newsagents, corner shops and supermarkets were the places from which children most frequently purchased food and drinks. Therefore future work and recommendations should not only include takeaway outlets but also supermarkets since all these outlets around schools tend to provide easy access to food and drinks high in fat, sugar and salt. This has been referred to previously as representing an obesogenic environment¹⁴, which could be contributing to the poor diet of school children in Scotland.

It would be difficult to restrict access at lunchtime or break time to outlets selling food or drinks without adopting a 'locked gate' policy in schools, though this has been trialled in some Scottish schools⁹. While this could restrict purchases at lunchtime and break time, additional measures would be needed to restrict the purchase of food or drinks on the way to or from school, particularly targeting secondary school children as almost half of all secondary school children report purchasing food or drinks on the way to or from school. Opportunities to purchase food or drinks on the way to and from school were greater among children in more deprived areas and purchases were also more likely by these children, which could contribute to inequalities in health.

Many of the other reasons given for leaving the school grounds at lunchtime, such as wanting to get out of school, to be with friends and to avoid queuing for food were similar to those reported previously. As part of the Schools (Health Promotion and Nutrition) Scotland Act 2007² recommendations were made to improve the canteen environment in schools, but despite significant attempts to improve them the findings of this survey suggest that there are still issues surrounding the canteen environment and provision of school meals. It is worth noting, however, that this might mask the fact that some children will always prefer an alternative environment to the one offered by schools, no matter what changes are made to the dining facilities.

This survey shows that the prevalence of secondary school children purchasing food and drink outside of school on school days is relatively high, with purchases at lunchtime being more common than at other times during the day. Furthermore, the most common food and drinks being purchased tend to be high in sugar and fat. Restricting purchases made by school children 'beyond the school gate' will be complex and is likely to require multiple strategies to tackle the problem but it is an important issue in terms of obesity and the general health of children that therefore needs to be addressed.

7.2 Methodology for the FPM

One aspect of this concept, as highlighted in the Obesity Route Map Action Plan, is the '*access to nutritionally inappropriate meals and high energy dense foods from business located in the vicinity of schools*'⁴. Prior to the current survey, there were no national data in Scotland documenting children's access to places to purchase food and drinks within the school vicinity or the prevalence of children purchasing food and drinks outside of school on school days.

Designing a module on a new topic presents a number of challenges. As part of the development of the FPM, cognitive interviewing was carried out to test the interpretation of the questions and the child's ability to follow the instructions and routing of questions in the SCQ. Following the cognitive interviewing, changes were made to the wording of questions and the delivery of the FPM based on the feedback from children in order to try and minimise any errors.

As the overall prevalence of purchasing of food or drinks outside of school was unknown at the time the study was designed, it was not possible to estimate in advance what size of sample would be required to yield sufficient numbers of children making purchases who could be asked more detailed follow-up questions. As a consequence, a limitation of the results from the new module was the available sample size for exploring differences between sub-groups (e.g. by age or SIMD quintile) and for exploring the influences on children's purchasing behaviour. The data presented in this report provide a good overview of purchasing habits and provides future studies with an estimate of the sample size required to ask more detailed follow-up questions and make comparisons between sub-groups.

The combined use of the CAPI and SCQ data collection methods for the secondary school children sometimes led to inconsistencies between the answers given in both modes, which meant that not all of the data could be used in the analysis. Some of these inconsistencies may have resulted from children not wanting to disclose their purchasing habits in the presence of a parent or guardian, but some may have been caused by confusion with the SCQ routing instructions. The decision about which questions to include in the CAPI was largely driven by a judgment about what were the least potentially sensitive topics. In many cases it was also driven by the complex routing in the module for which CAPI methods are preferable to self-completion as routing errors are eliminated by the computer programme.

Despite these limitations, the survey provides timely and unique information about this important topic, and has generated some useful methodological insights for future studies. For example, a computer-assisted self-completion interview (CASI) in which respondents read questions on screen and input their own answers (as opposed to the CAPI which is interviewer administered) would be an alternative to the paper-based self-completion questionnaire, and would help avoid future errors due to confusion with routing and overcome the issue of answering sensitive questions in front of parents or guardians. CASI methods were not used for this study because it would have added to the interview length (the paper-based SCQ was completed by the children while the adult continued with the CAPI). If resources permitted, a CASI would be preferable as this would eliminate many of the inconsistencies that resulted in cases being excluded from the analysis presented here. CASI methods are ideal for older children, most of whom are very familiar with technology. An audio-CASI could also be developed for use with younger children or those with literacy problems. This would involve children listening to questions via headphones (rather than reading text on screen) and inputting their answers.

7.3 Implications

7.3.1 Implications for health improvement

The easy access to places outside of school selling less healthy food and drinks that are often banned in school could undermine the work being done in schools to improve the dietary intakes of children. Whilst the reason for children from more deprived areas more frequently purchasing food and drinks during the school day is not yet known, it is clear that having access to more places that sell food and drink may be a contributing factor and one which could influence inequalities in health.

Although the proportion of primary children who reported purchasing food and drinks on the way to and from school was relatively small, boys were more likely than girls to purchase food or drinks. The significant increase in the proportion of boys aged 8-11y classed as *overweight including obese*, from 29% in 2006 to 40% in 2010 (see Report Volume 1), suggests that further research on purchasing behaviour in boys of this age is warranted. This survey also found that secondary school boys were twice as likely as girls to purchase food or drink outside of school at break times.

The type of food and drinks purchased outside of school on school days tended to be high in sugar and fat which will be contributing to the high intakes of NMES and saturated fatty acids in children in Scotland. Therefore, measures should be taken to encourage healthier food purchases amongst children and restrict the availability and purchasing of foods high in these nutrients. Possible options in order to achieve this include encouraging children to remain in school, restricting the types of outlets around the school, restricting price offers on certain food and drink items in outlets around schools and encouraging these outlets to stock and promote healthier snack options and/or smaller portion size options for foods high in sugar and fat.

7.3.2 Implications for further research

Whilst there was limited information on the expected proportion of children purchasing food or drinks around the school day prior to the survey, the proportion of children at primary and secondary school in Scotland who have the opportunity to make purchases and the proportions that actually do so have been quantified in this survey. These estimates should be used to help design the sample for any future study of this topic.

The survey format provided a format for exploring this topic, but there were some limitations and a number of questions were raised which warrant further investigation. Using qualitative methodologies to explore some of these issues would facilitate a more in-depth understanding of some of the factors influencing children's purchasing behaviour. Such an approach would help uncover and explain the complexity of children's food and drink purchasing practices including possible contradictions in their behaviour.

There is scope for secondary analyses that could be carried out with the data from the current survey. These include:

- Analysis of purchasing according to SIMD of the school.
- Comparison of food and nutrient intake between children who ever versus never purchase foods around the school day.

Key points

- This study provides the first information on food and drink purchasing outside of school on school days from a national sample of children in Scotland.
- Secondary school children were more likely to purchase food and drinks outside of school than primary school children. Lunchtime was when secondary children were most likely to purchase food and drink outside of school compared to break time or on the way to or from school.
- Children living in more deprived areas were more likely to report purchasing food and drinks on the way to or from school, but they were also more likely to pass places that sell food or drink, compared with children living in less deprived areas.
- The type of food and drinks purchased outside of school on school days tended to be high in NMES and fat, which will be contributing to the high intakes of NMES and saturated fatty acids in children in Scotland
- The main reasons given by secondary school children for purchasing food or drink outside of school at lunchtime were to get a wider choice of food and drinks and because they preferred the taste of the food and drinks that they could buy. Price was an important factor, as almost half of the secondary school children making purchases outside of school at lunchtime reported that it was good value for money.
- Newsagents, grocery/corner shops and supermarkets were the range of places from which children were most likely to purchase food or drinks, with supermarkets being the place from which they most frequently make purchases at lunchtime. The choice of outlet used to purchase food or drinks was often based on its proximity to the school.

Recommendations

- Further work to develop the methods for exploring the reasons for purchasing food and drinks outside schools is needed. Qualitative research methods would provide a more in-depth understanding of the factors influencing children's purchasing behaviour.
- Research is required to understand what measures need to be taken to encourage healthier food purchases amongst children. This may include assessing the impact of encouraging shops in the vicinity of schools to restrict price offers on certain food and drink items; to stock and promote healthier snack options; and/or to stock smaller portion size options of foods higher in NMES and saturated fatty acids.
- The FPM could be a useful tool to measure purchasing habits of children outside of school in future surveys. It would benefit from further testing in relation to different methods of administering the tool in order to reduce the routing errors between the questions.
- The reasons why children from more deprived areas were more likely to purchase food or drinks on the way to school is unknown, and it is unclear if this is simply due to more access to places selling food or drinks. This warrants further investigation.

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