

Research Bulletin No 5:

The influence of nutrition policy and practice on children's eating habits in school



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Background

Health policies within individual schools have a key role to play in the overall implementation of the school food: top marks programme¹. Local policies limiting the availability of high fat or sugar foods and drinks in school engender a whole school approach to healthy eating, and can bolster the success of the nutritional standards for school meals and other food in schools.

To help assess the impact of the school food: top marks programme, research exploring attitudes towards food in schools and eating behaviours was completed in 2008, and again in 2012. In 2008, 3277 children from primary and post-primary schools across Northern Ireland (representative of Education and Library Board² area; school type; and free school meal entitlement (FSME) participated in cross-sectional quantitative research. The survey was repeated in 2012 with a sample of 3291 children. Further details on the research methodology are presented in Research Bulletin No. 1.³

A series of seven research bulletins have been produced outlining the key outcomes of this research and making recommendations for future action with a full list of these bulletins available within the School food: top marks research background and approach bulletin.³ This fifth bulletin specifically illustrates the extent to which schools have adopted nutrition or health related policies and describes how the implementation of these can impact on the eating habits of children within the school setting.

School policies

Throughout the duration of the research, the most popular school policy reported by principals was **keeping pupils on-site** at break and lunch times (see Table 5.1, page 4). In 2012, 93% of principals maintained they had implemented this policy,

¹ Since the completion of this research, a review of the school food marketing and promotion strategy has taken place. Following consultation with stakeholders the school food: top marks programme has been renamed and rebranded to school food (try something new today). The aims and objectives of the programme have remained the same.

² From 1 April 2015, the five Education and Library boards (ELBs) have amalgamated to become the Education Authority.

³ Gilmore G, Beattie K. Research Bulletin No. 1: School food: top marks, research background and approach. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

while 7% (n=15) of principals indicated that their pupils were allowed off school premises at break and/or lunch time without having specific permission; twelve during lunchtime and three at both break and lunch time. However, there was a significant difference between primary and post-primary schools and the likelihood of implementing an onsite policy – all of the primary school principals who responded to this question kept children onsite, compared to 82% of post-primaries ($p<.001$).

The importance of keeping pupils onsite was a recurrent theme throughout the qualitative research with catering staff in schools and focus groups with the wider catering managers and coordinators. Catering staff in school pointed out two issues in allowing children to leave school at lunch time: firstly, it diverted resources away from the canteen; and secondly, the food the children bought outside school was unhealthier than that sold in the school canteen. Indeed, as is discussed later in this bulletin, when the types of foods and drinks bought from different outlets were examined, those purchased from shops or catering were more likely to be higher in fat and/ or sugar than those from other sources.

“Once they hit 4th, 5th, 6th year, they are allowed out at lunch time... 400 children hitting that town every day so every single shop is selling hot food - the Chinese...they are all doing school specials”. Interview; school catering manager, Belfast Education and Library Board (ELB).²

Table 5.1 School policies in 2008 and 2012 (as reported by principals)⁴

	2008		2012			
	All ⁵ (N=298)	Primary (N=180)	Post-primary (N=112)	All ⁶ (N=209)	Primary (N=121)	Post-primary (N=85)
Break time policy	73%	94%***	45%***	79%	97%***	49%***
Whole school nutritional policy	67%	71%	62%	75%	72%	79%
Fizzy drinks policy	72%	77%	67%	79%	90%***	64%***
Chocolate, crisps, sweets policy	61%	64%	58%	53%	53%	52%
Healthy tuck shop	35%	32%	40%	71%	69%	72%
On-site policy at lunch time	91%	99%***	79%***	93%	100%***	82%***

Healthy break policies were the next most common healthy eating policy in schools in both 2008 and 2012 (see Table 5.1, above). It was interesting to note that the proportion of principals who indicated their school had a break time policy increased

⁴ *** signifies a p-value of less than 0.001, where the observed difference could only be expected to have occurred by chance in 1 in 1000 times in repeated tests; ** signifies a p-value of less than 0.01, suggesting that the observed outcome would be expected to occur by chance only 1% of the time, and * suggests the difference is statistically significant at a p-value of less than 0.05 (suggesting that the observed outcome would be expected to occur by chance only 5% of the time).

⁵ ‘All’ category includes 6 special schools- not shown in individual primary / post primary school analysis.

⁶ ‘All’ category includes 3 special schools- not shown in individual primary / post primary school analysis.

from 73% in the initial wave of the research to 79% in the most recent survey (see Table 5.1). This was due to increases in both primary and post-primary sector implementing break time policies. However, again primary school principals were more likely to indicate that they had a break time policy in their school, compared to post-primary (for example, in 2012, this was 97% and 49% respectively; $p<.001$).

In 2012, there was an increased number of principals who indicated their school banned high sugar **carbonated drinks**, compared to the 2008 baseline research⁷, (73% in 2008 increasing to 79% in 2012), however, again these policies were found to be more prevalent in primary schools (90%) than post-primaries (64%) ($p<.001$).

Nevertheless, of concern, the proportion of schools with a **no chocolate, crisps or sweets policy** decreased between 2008 and 2012, falling from 61% to 53% (see Table 5.1, page 4).

Food sources

As part of this research, food outlets available to primary and post-primary children were explored. It was found that **vending machines and tuck shops were more common in post-primaries, despite declines in their numbers since 2008** (see Table 5.2, page 6).

Data collected from school principals who participated in the research showed that tuck shops were more than twice as common in post-primary schools compared to primary schools (16% and 6% respectively). In contrast, only 2% of the primary school principals who took part in the research indicated that their school had a vending machine, compared to 43% of those in post-primaries.

Another potential source of food for children were fast food outlets. In 2012, one in four (25%) post-primary principals indicated there was a fast food outlet near their school – nearly double that of 2008 (13%), a pertinent issue given that 7% of schools within this sample allow children off site during school hours.

⁷ Gilmore G, Gossrau-Breen D, MacDonald L, Taylor L and McGowan L. School food: top marks. A summary report on food in schools research in Northern Ireland. Public Health Agency, Belfast 2010. Available at: <http://www.publichealth.hscni.net/sites/default/files/Top%20marks%20summary%20report.pdf>. Accessed 18 July 2013.

Table 5.2: Availability of food outlets (as reported by principals)⁸

	2008			2012		
	All ⁹ (N=298)	Primary (N=180)	Post-primary (N=112)	All ¹⁰ (N=209)	Primary (N=121)	Post-primary (N=85)
School canteen	83%	74%***	98%***	91%	86%***	98%***
Breakfast clubs	58%	30%***	51%***	50%	47%	54%
Vending machines	20%	-	52%***	20%	2%***	43%***
Tuck shop	13%	7%***	22%***	10%	6%***	16%***
Fast food outlets	5%	-	13%	14%	5%***	25%***

Product availability

While having multiple sources of food available within schools can offer children increased consumer choice, the type of foods sold needs to be aligned with nutritional standards. This is vital to the success of the food in schools initiative, given that 2012 results showed that seven out of ten children purchased something from a canteen, vending machine or tuck shop at least once a week, with 28% of these children purchasing foods at least once a day from these sources (results not shown).

While the majority of principals admitted limited monitoring of foods and drinks sold in school (see Bulletin 3)¹¹, a small number of principals did openly acknowledge that vending machines, tuck shops (and to a lesser extent, canteens) sold foods contravening nutritional standards (including sweets, chocolates, crisps, cereal bars, carbonated drinks, and flavoured fizzy water)¹². However, data collected from post-primary pupils revealed that 88% of schools participating in the research (42 of the 53 schools) had non-compliant food items¹³ available within the school tuck shop or vending machine (results not shown). Qualitative research with school catering staff

⁸ *** signifies a p-value of less than 0.001, where the observed difference could only be expected to have occurred by chance in 1 in 1000 times in repeated tests; ** signifies a p-value of less than 0.01, suggesting that the observed outcome would be expected to occur by chance only 1% of the time, and * suggests the difference is statistically significant at a p-value of less than 0.05 (suggesting that the observed outcome would be expected to occur by chance only 5% of the time).

⁹ 'All' category includes 6 special schools- not shown in individual primary / post primary school analysis.

¹⁰ All' category includes 6 special schools- not shown in individual primary / post primary school analysis.

¹¹ Gilmore G, Beattie K. Research Bulletin No. 3 Adherence and attitudes to nutritional standards and healthy eating policies in schools. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

¹² Due to the small number of principals involved, it was not possible to do any further analysis on the group who indicated that they did sell items contravening standards. Foods assessed as contravening the nutrition standards are defined in Nutrition Standards: the essential guide. Available at www.publichealth.hscni.net/sites/.../The_Essential_Guide_09_10.pdf

¹³ The definition of compliant and non-complaint foods was taken from the School food: essential guide. Available at www.publichealth.hscni.net/sites/.../The_Essential_Guide_09_10.pdf. Accessed 02 July 2015.

and managers also indicated that the sale of non-compliant foods and drinks was widespread in school tuck shops and vending machines.

Although 13% of post-primary pupils said they had purchased healthier food from the tuck shop, this rose to 25% who said they frequently bought unhealthier food items, such as sweets, chocolate and crisps (see Figure 5.1). The disparity between sales of compliant and non-compliant foodstuffs was more marked in vending machines.¹⁴ Just 7% of post-primary pupils said they bought healthier foods and snacks from vending machines, whilst almost one in five (19%) frequently purchased items high in sugar or fat, like crisps or chocolate. More than one in five (21%) frequently bought non-compliant drinks from vending machines with one in eight (13%) of post-primary pupils maintaining they frequently purchased non-compliant drinks from their school tuck shop.

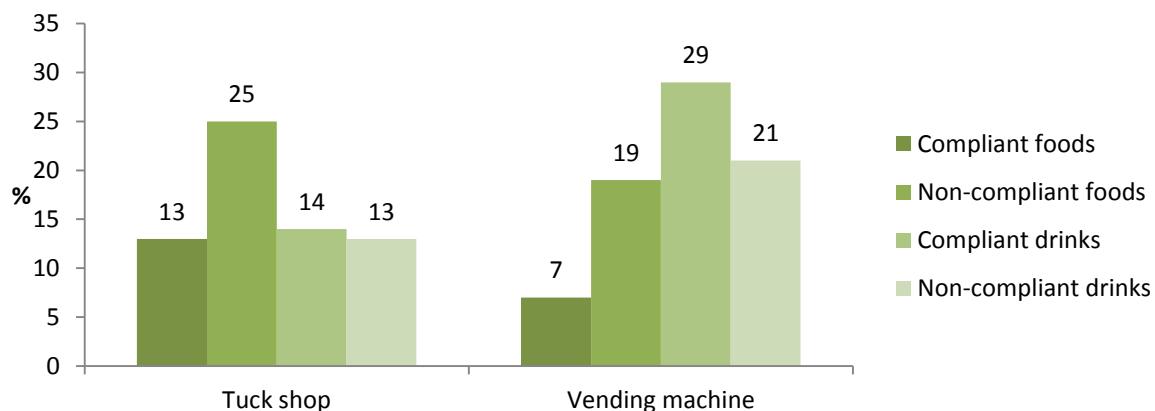
"Our school has a tuck shop where children can go and buy Mars bars and sweets, anything they like really, so we, we are very much up against it here... Parents are giving their children money for the canteen and it is all being spent in the tuck shop!" Interview; school catering manager, North Eastern ELB.²

Catering staff explained that the prevalence of non-compliant food and drinks items in school had a profoundly negative impact on the successful implementation of the nutritional standards. Caterers believed the availability and prevalence of these foods in tuck shops and vending machines reduced demand for school meals and other foods sold in the canteen, where children were restricted to foods compliant with the nutritional standards - i.e. no sweets, chocolate etc. (See Research Bulletin No. 6).¹⁵

¹⁴ The definition of compliant and non-complaint foods was taken from the School food: essential guide. Available at www.publichealth.hscni.net/sites/.../The_Essential_Guide_09_10.pdf Accessed 02 July 2015

¹⁵ Beattie K, Gilmore G. Research Bulletin No. 6: Uptake and factors impacting on demand for school meals. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

Figure 5.1 Compliant and non-compliant items purchased by post-primary children from tuck shops and vending machines in 2012 (N=2164)



Break time consumption

Children were asked to record what they ate and drank at break time, and findings were grouped into foods and drinks that were compliant or non-compliant with the nutritional standards. Findings suggest that, compared with 4 years ago, **children in primary and post-primary schools are now eating fewer unhealthier snacks and having healthier foods more frequently at break time**, although the change is more marked amongst primary children (See Table 5.3, page 9).

In primary schools, children's consumption of non-compliant food items decreased from 44% in 2008, to 30% in 2012 ($p<.001$). Moreover, post-primary pupils also appeared to be eating fewer unhealthier food items such as crisps, chocolate and sweets for break, with consumption of non-compliant snacks decreasing from 58% in 2008 to 53% in 2012 ($p<.001$).

In both years of the research, **primary school children consumed more compliant food and drinks items (such as fruit, bread, toast or pancakes) than non-compliant**, 73% and 30% respectively. **In contrast, post-primary children consumed more non-compliant than compliant foods (53% and 48% respectively).**¹⁶

¹⁶ It was not possible to conduct tests of statistical significance.

Table 5.3 Types of food and drinks consumed by pupils at break time¹⁷

	2008 Primary (N=1126)	2012 Primary (N=1138)	2008 Post-primary (N=2148)	2012 Post-primary (N=2164)
Compliant food	72%	73%	44%*	48%*
Non-compliant food	44%***	30%***	58%**	53%**
Compliant drinks	68%	70%	56%	57%
Non-compliant drinks	18%**	13%**	28%	30%

Of concern, the most recent research data show 15% of primary school children and 19% of post primary school children report having nothing to eat at break, while 23% and 26% of primary and post primary children have nothing to drink at break. **Overall 10% of post-primary and 7% of primary school children have nothing to eat or drink at morning break** (see Table 5.4).

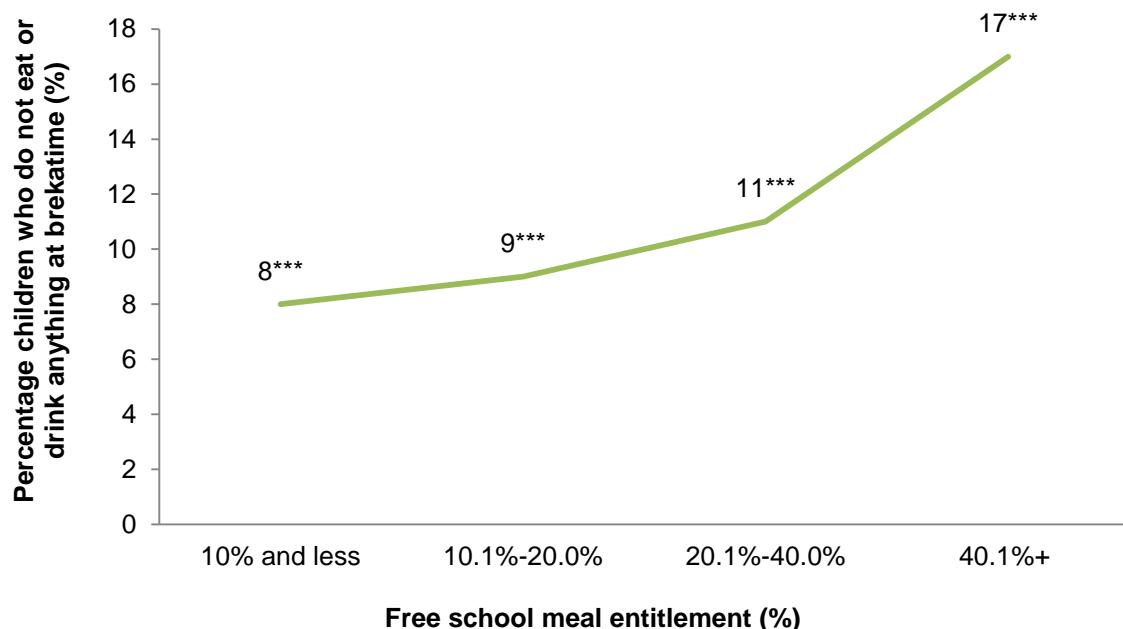
Table 5.4 Proportion of pupils who don't eat or drink at break time in school¹⁷

	2008 Primary (N=1126)	2012 Primary (N=1138)	2008 Post-primary (N=2148)	2012 Post-primary (N=2164)
Don't eat anything	12%*	15%*	19%	19%
Don't drink anything	22%	23%	25%	26%
Don't eat or drink anything	6%	7%	9%	10%

Moreover, the data revealed a **clear gradient according to the relative deprivation status of the school, as measured by the proportion of pupils at the school with a free school meal entitlement (FSME), and likelihood of not having anything to eat or drink at break time**. Children attending post-primary schools in the most deprived group (i.e. those with 40.1% + FSME) were more than twice as likely not to have anything to eat or drink at break in comparison with children attending schools with lower FSME ratios: 8% of post-primary children in the least deprived schools usually didn't get anything for break time, increasing to 17% of children attending schools in the most deprived quartile ($p<.01$) (see Figure 5.2).

¹⁷ *** signifies a p-value of less than 0.001, where the observed difference could only be expected to have occurred by chance in 1 in 1000 times in repeated tests; ** signifies a p-value of less than 0.01, suggesting that the observed outcome would be expected to occur by chance only 1% of the time, and * suggests the difference is statistically significant at a p-value of less than 0.05 (suggesting that the observed outcome would be expected to occur by chance only 5% of the time).

Figure 5.2 Post-primary children who do not usually eat or drink anything at break time according to school FSME (2012, N=2117)¹⁸



Break time sources of compliant and non-compliant items

Most non-compliant snacks and drinks consumed by both primary and non-primary school children were brought into school from home (see Figure 5.3, page 12). For example, less than one in ten (9%) primary school children who were supplied with food items at break time by the school had snacks which did not comply with nutritional standards. In comparison, those who brought food in from home were more than four times as likely to have non-compliant items, with more than two in five primary school children who brought break time items from home having high fat or sugary snacks (42%; $p<.001$).

This was exacerbated as children got older, with **post-primary children more likely to bring in unhealthier items and less likely to bring in compliant items from home than their primary school counterparts**. For example, as mentioned above, while 42% of primary children who brought food from home consumed items such as crisps and chocolate, this increased to more than three-quarters (77%) of post-primary pupils who brought break time snacks from home. This suggests there

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should be greater engagement with parents – particularly parents of post-primary pupils - in order to raise awareness of the impact of children's consumption of foods and drinks high in fat, sugars and salt. Moreover, it is suggested that parents should be given information on healthier alternative break time snacks and drinks.

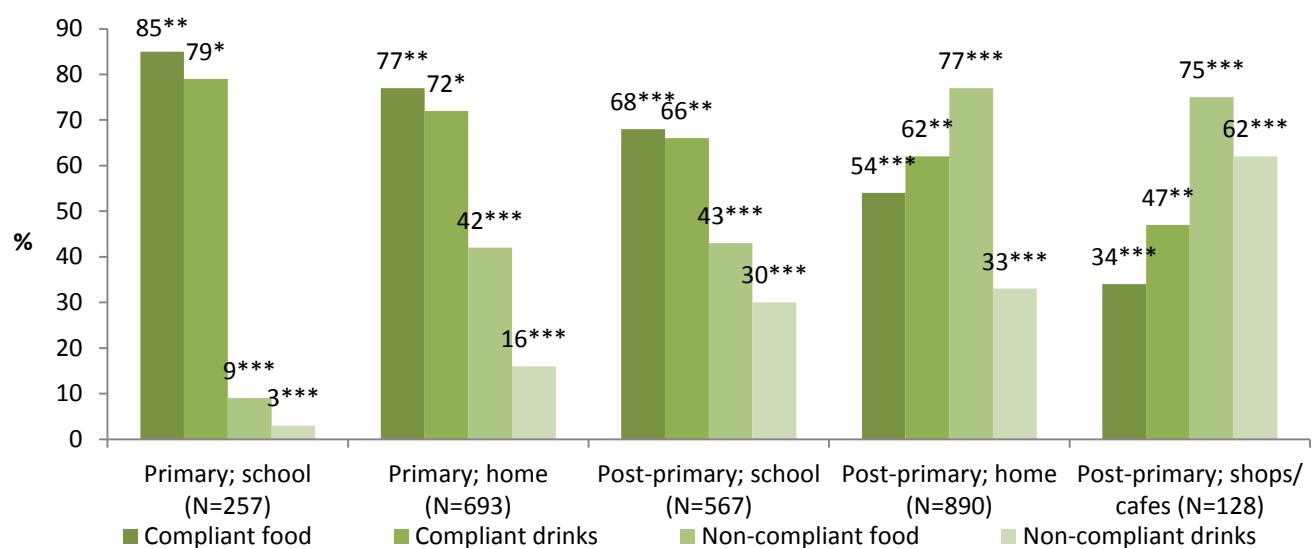
Children who purchased food outside school¹⁹ – for example, at newsagents, garages or shops – were more likely to buy non-compliant food and drinks compared to those who get their drinks and snacks from other sources. Three-quarters (75%) of post-primary children who purchased food outside school had items which were high in sugar, fats or salt, compared to 43% of those who purchased or were given snacks from their school ($p<.001$). This finding, coupled with that above relating to the types of snacks and drinks supplied to children by parents, reiterates the need for robust school break time policy regarding the types of foods and drinks allowed.

A higher proportion of post-primary children were sold non-compliant snacks and drinks by their school itself than primary children. For example, although fewer than one in ten (9%) primary school pupils who bought or were given a break time snack in school had non-compliant food items, this increased to 43% of post-primary pupils who subsequently consumed high fat, sugary or salty snacks.

Moreover, post-primary children who usually bought something in school were ten times more likely than primary school pupils to have a fizzy or sugary drink at break (33% compared to 3% respectively). This may in part be explained by the higher prevalence of tuck shops and vending machines in post primaries (as reported by principals and in qualitative research with school catering staff).

¹⁹ Only post-primary children were asked about buying food and drinks outside school.

Figure 5.3 Sources of compliant and non-compliant food and drinks items (2012)²⁰



Lunch time food sources

While it is beyond the scope of this study to determine the actual foods children ate at lunch time, this research did examine lunchtime food sources. **Just over two out of five (41%) parents indicated that their child took school meals most of the time, whilst 44% said their child sometimes had school meals.**²¹

Half (50%) of all parents said their child usually had a packed lunch, and slightly over one in five said they sometimes gave their children a packed lunch. Although parents suggested that packed lunches could ensure that their children were provided with the types of foods they actually liked, school catering staff maintained the nutritional content of some lunch boxes could be extremely poor, with some children simply snacking on sweets, crisps and fizzy drinks rather than having a balanced meal. Further information relating to packed lunches and school meals is discussed at length in Research Bulletin No. 6.²¹

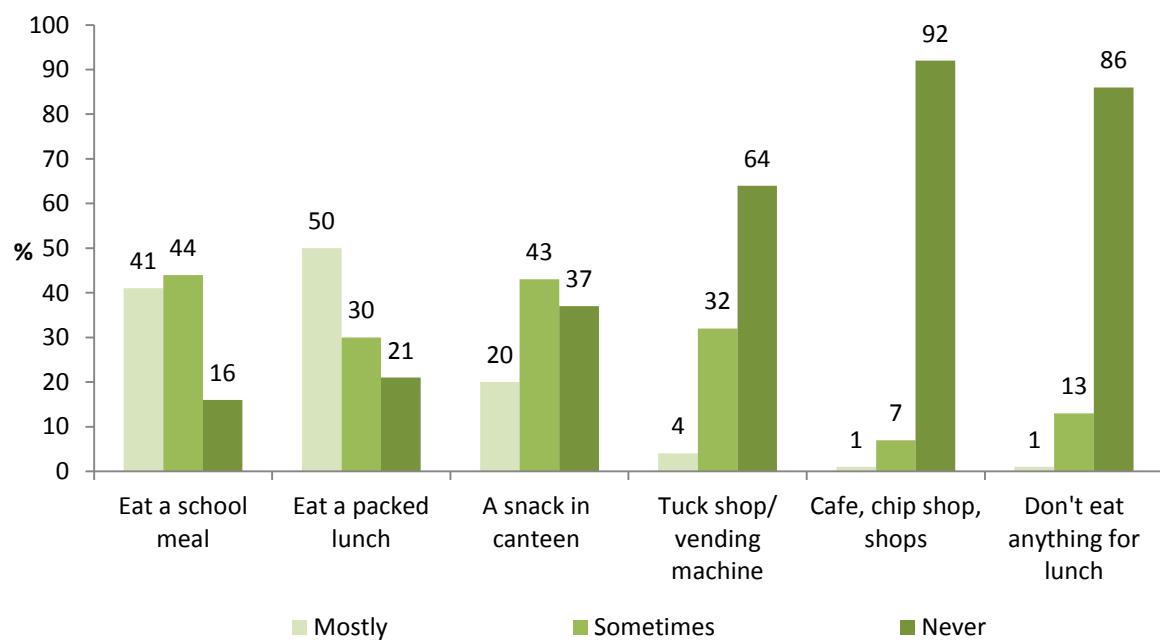
²⁰ *** signifies a p-value of less than 0.001, where the observed difference could only be expected to have occurred by chance in 1 in 1000 times in repeated tests; ** signifies a p-value of less than 0.01, suggesting that the observed outcome would be expected to occur by chance only 1% of the time, and * suggests the difference is statistically significant at a p-value of less than 0.05 (suggesting that the observed outcome would be expected to occur by chance only 5% of the time).

²¹ Research Bulletin No. 6 provides a fuller description of those who did and did not take school meals, and looks at some of the reasons behind choice of lunch. Beattie K, Gilmore G. Research Bulletin No. 6: Uptake and factors impacting on demand for school meals. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

However, given that over a third of parents (36%) reported their child (4% mostly or 32% sometimes) bought a snack for lunch from the tuck shop or vending machine, schools should ensure these outlets are fully compliant with the standards for other food in schools. Furthermore, 1 in 12 (8%) parents said their child got lunch either sometimes (7%) or mostly (1%) from a shop outside school, for example a cafe or chip shop. Given the high calorie and high fat foods typically sold in fast food outlets, school implementation of on-site policies at lunchtimes could limit children's access to these outlets, and help facilitate full implementation of the nutritional standards.

Moreover, of concern, this research has found that 14% of parents reported their child either mostly or sometimes (1% and 13% respectively) did not eat anything at lunchtime²² (see Figure 5.4).

Figure 5.4 How often does your child do the following for lunch? (2012; N=1119)



²² The issue of children who do not eat anything is explored in further detail in Bulletin 2. Beattie K, Gilmore G. Research Bulletin No. 2: The influence of deprivation on knowledge, attitudes and healthy eating behaviours. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

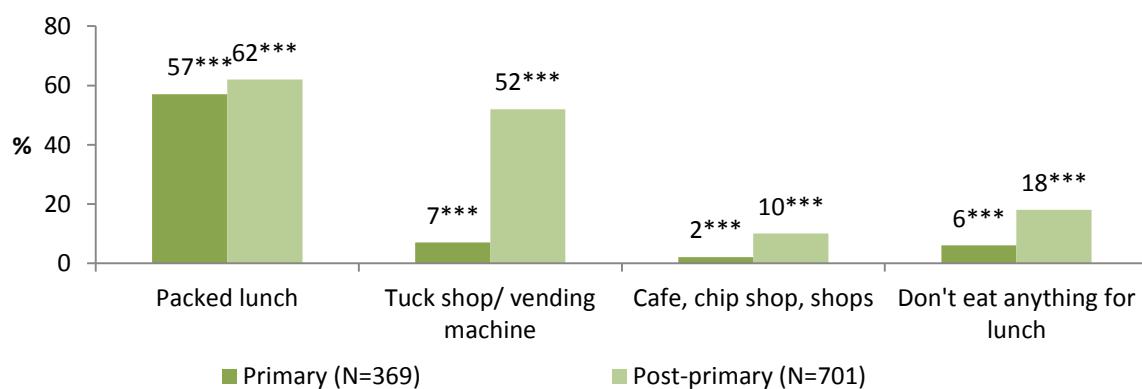
Children's lunch time food sources

In comparison to parents of primary school children, post-primary pupils' parents were:

- more likely to say that their child 'usually or sometimes' took a packed lunch (62% and 57% respectively; $p<.001$).
- over seven times more likely to say their child 'usually or sometimes' bought their lunch from school vending machine or tuck shop (52% post-primary and 7% primary respectively; $p<.001$).
- five times more likely to say their child had lunch from a chip shop or cafe, with one in ten (10%) post-primary parents saying their child usually or sometimes took this lunch option compared to only 2% of primary parents ($p<.001$).
- three times more likely to say their child sometimes or usually did not have anything to eat at lunchtime – 18% of parents recruited through post-primary schools said their child did not eat anything whereas 6% of primary parents said the same ($p<.001$) (see Figure 5.5).

Interestingly, parents of different socio-economic groups did not differ significantly in whether they said that their child had lunch from the tuck shop/ vending machine, an outside food venue (e.g. chip shop or cafe), or whether their child usually or sometimes didn't eat at lunch time.

Figure 5.5 Lunchtime sources of food according to primary and post-primary parents²³



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Conclusion

- The food children consume at break time has improved within the primary and post-primary sector since the implementation of the food in schools programme. Pupils are simultaneously eating more healthy foods, while consuming fewer high fat, sugary or high salt items at break time. However, children in post-primary schools are still consuming more non-compliant food and drinks items than their primary school counterparts. This suggests a need for additional work in post-primary schools.
- Overall healthy eating practices appear to be most successful in primary schools. However, primary schools were also most likely to have other individual school policies to support pupils' healthy eating; such as healthy breaks schemes, and have more communication with key stakeholders (including parents) regarding issues to do with school meals and nutrition in school. Children's consumption of unhealthier foods and drinks at break and lunch time could be stemmed through the development and implementation of individual school policies and improved communication. For example:
 - Most of the unhealthier items consumed at break time came from home. Moreover, this issue is particularly pertinent in post-primary schools. Implementation of break time policies at a school level (with regional guidance from the Food in Schools Forum and Public Health Agency (PHA) on management and implementation) may help address this issue. Research findings have shown that parents are supportive of school rules on healthy eating; therefore regional healthy break schemes would have an immediate impact on children's food consumption (see Bulletin No. 3).²⁴
 - Caterers highlight many packed lunches brought from home are of poor nutritional value. The Food in Schools Forum and PHA should consider working with schools in order to provide parents and children – particularly

²⁴ Gilmore G, Beattie K. Research Bulletin No. 3 Adherence and attitudes to nutritional standards and healthy eating polices in schools. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>

- those in post-primary schools – with guidance as to healthy snacks and recommendations for healthier foods and drinks for inclusion in lunch boxes. Healthy pack lunch schemes or treat days could be integrated into schools to limit the frequency or volume of unhealthier types of food in packed lunches.
- Parents and children (particularly in post-primary schools) bringing food into schools that does not meet the nutritional standards detracts from a whole school healthy eating ethos. This in turn undermines existing healthy eating policies within schools and inhibits the development of other schemes, as schools often need parental support in order for these schemes to work effectively. This suggests that more emphasis should be put on intensively engaging with parents, highlighting the importance of good nutrition and promoting campaigns for healthy eating for children, and on improving communication between schools and parents on issues and resources linked to healthy eating.²⁵
 - Children in post-primaries were more likely than primary aged children to source unhealthier drinks and snacks from school. This is possibly linked to the popularity of tuck shops and vending machines in post-primary schools. Schools need to be aware of the content of these outlets and ensure provision of foods and drinks sold comply with the standards for other food and drinks sold in schools. Currently the availability of non-compliant foods within these outlets undermines the whole school approach necessary for the successful implementation of the food in schools programme. In addition, as discussed previously more robust monitoring of the types of foods and drinks sold in schools needs to be put in place (Bulletin 3).²⁶
 - Another issue of concern is the rise in numbers of fast food outlets in close proximity to post-primary schools. These outlets can encourage children to consume high calorie drinks and foods at break or lunch. While the majority of schools have on-site lunch and break time policies in place it is suggested that all schools should adopt these, thereby limiting children's access to fast food outlets during the school day.

²⁵ Gilmore G, Beattie K. Research Bulletin No. 4 Marketing the School food: top marks programme and healthy eating messages Public Health Agency, Belfast 2016. Available <http://www.publichealth.hscni.net>

²⁶ Gilmore G, Beattie K. Research Bulletin No. 3 Adherence and attitudes to nutritional standards and healthy eating polices in schools. Public Health Agency, Belfast 2016. Available at <http://www.publichealth.hscni.net>.

- It is important for children to eat on a regular basis to meet their nutritional requirements for growth. A proportion of children do not have anything to eat or drink for break – particularly in schools with higher numbers of pupils who are eligible for free school meals. A collective response is needed to address this issue, and it is suggested that the Department of Education should work alongside schools to emphasise the importance of eating a small healthy snack at break time, and communicate this both to children and parents. Moreover, the possibility of providing a free healthy break in schools with the highest ratios of FSME should be explored.