Research Bulletin No 2:

The influence of deprivation on knowledge, attitudes and healthy eating behaviours.

HSC Public Health Agency

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school food

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Background

Evidence shows a substantive link between nutrition and deprivation, with adults living in the most deprived communities consuming sweets, chocolates and fizzy drinks more frequently than those in less deprived communities. In addition those in the most deprived communities tend to eat processed meats and foods more frequently and be less likely to eat the recommended number of portions of fruit and vegetables each day.[1]

A child's diet may be strongly influenced by availability and access to different foods. This availability and access is in turn influenced by a child's environment (at home and at school) and the opportunities they are provided with to taste and eat healthy foods. [2]

Northern Ireland (NI) research examining children's eating habits is limited in terms of deprivation analysis. However, regional data shows that most children are not getting the recommended daily portions of fruit and vegetables. The most recent research in Northern Ireland found that approximately one in six (16%) children aged between 11 and 16 years were consuming 5 portions of fruit and vegetables per day, while almost one in five children never eat breakfast on a school day.[3] Moreover, one in four (25%) of children aged 2 – 15 years in Northern Ireland are classified as either overweight or obese.[4]

Concerns over unhealthy eating patterns and poor nutrition amongst children led to the introduction of the School food: top marks programme[5]. The programme, launched by the Department of Education, the Department of Health, Social Services and Public Safety and the Public Health Agency, recognises the important role

[1] DHSSPS 2012. Health Survey Northern Ireland 2010/11: Analysis of results by deprivation. Available at: http://www.dhsspsni.gov.uk/health_survey_2010-11_deprivation.pdf&rct=j&frm=1&q=&esrc=s&sa=U&ei=HeYWVIzIOaaR7AaRgIGwDA&ved=0CBQQFjAA&usg=AFQjCNF7awmQX2S1nT6OmMBRIey_TkyyNw. Accessed 15/09/2014.
[2] Food Standards Agency 2007. Low income diet and nutrition survey: summary of key findings. Available at http://tna.europarchive.org/20110116113217/http://food.gov.uk/science/dietarysurveys/lidnsbranch/#h_4. Accessed 15/09/2014.
[3] NISRA 2014. Young Person's Behaviour and Attitudes Survey Bulletin October – November 2013. Available at http://www.csu.nisra.gov.uk/survey.asp96.htm Accessed 9/11/2015.
[4] Department of Health, Social Services & Public Safety. Health Survey Northern Ireland: First Results 2013/14. Belfast: DHSSPS, 2014. Available at: http://www.dhsspsni.gov.uk/hsni-first-results-13-14.pdf Accessed 9/11/2015.
[5] 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.

schools play in contributing to childhood nutrition and in developing children's knowledge and skills in relation to making healthier food choices. This bulletin presents key findings from the second wave of Food in School research conducted in 2012 with children, parents, principals, teachers, chairpersons of Boards of Governors, and catering staff across Northern Ireland. The methodology and sampling strategy used in the research is discussed in detail in Bulletin 1.[6] Stakeholders' attitudes towards healthy eating are investigated, and linkages between deprivation and a reduced likelihood of consuming the recommended portions of fruit and vegetables, eating breakfast, and dinner on a regular basis are demonstrated. Furthermore, this bulletin highlights the need for schools to play a key role in helping educate and provide healthy food for children - especially those from deprived communities.

Attitudes towards healthy eating

In 2012, post-primary pupils[7] were asked about their attitudes towards healthy eating, with the majority of pupils believing that eating healthy foods was very or quite important (73%), (Table 2.1). **Girls were generally more likely to think healthy eating was important** – 76% of girls felt eating healthily was either very or quite important, compared to 70% of males ($p<.001$).

As pupils got older they were less likely to consider healthy eating to be important. For example, although 7% of 11 year olds considered healthy eating to be of no consequence, this increased to 10% for 14 year olds ($p<.001$) (see Table 2.1).

[6] 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
[7] This question was asked of post-primary pupils only.

Table 2.1 Post-primary pupils' attitudes towards healthy eating (2012)[8]

		Very or quite important %	Slightly important %	Not important %	Don't know %
ALL (N=2081)		73	17	7	3
Gender ***	Male (N=900)	70	17	8	5
	Female (N=1181)	76	16	6	2
Age ***	11 years (N=61)	82	12	7	0
	12 years (N=480)	78	12	5	5
	13 years (N=502)	77	16	5	3
	14 years (N=529)	67	19	10	4
	15 years (N=491)	71	18	9	2

Self-perception of diet

All pupils who participated in the research generally had a positive perception of the healthiness of their diet. However, the number of children who indicated that the food they ate was usually 'very healthy' or 'quite healthy' actually decreased since baseline research in 2008, while the proportion of children who said their diet was 'very unhealthy' or 'quite unhealthy' increased (see Figure 2.1).

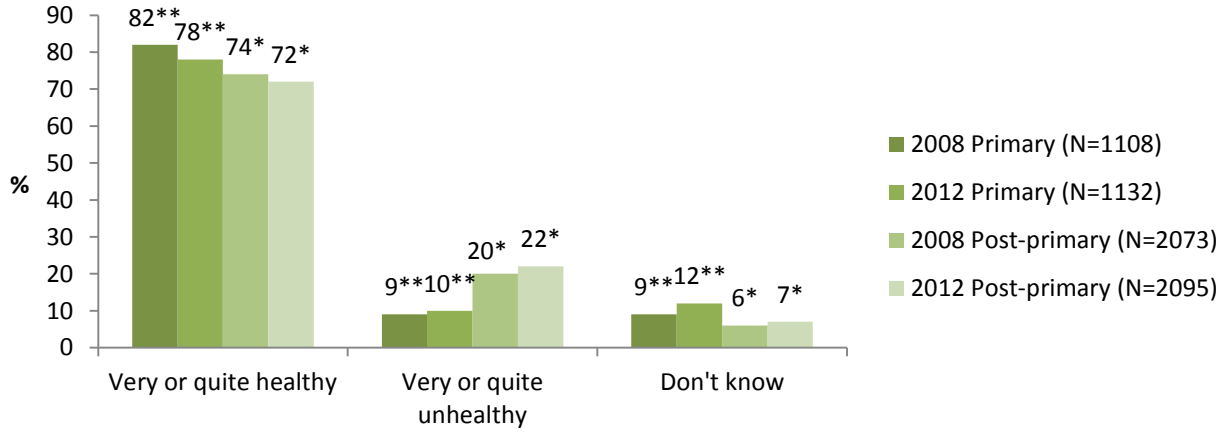
Primary children who felt their diet was 'very or quite healthy' decreased from 82% in 2008 to 78% in 2012 ($p>.01$). A similar change in perception was exhibited by post-primary children, with 74% describing the food they ate as 'very healthy or quite healthy' in 2008, decreasing to 72% who said the same in 2012 ($p<.05$). In 2012, more than one in five (22%) post-primary pupils described their diet as quite or very unhealthy.

Despite this perception, this research has shown healthy snacks consumed by primary and post primary children at break time within schools actually increased; unhealthy snacking in schools decreased (although only for primary pupils)[9] and the average amount of fruit and vegetables consumed by all children increased (as is discussed later in this bulletin). While it cannot be deduced from this research *why* children believe that their diet has become less healthy over the years, it may be

[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).

speculated that children now are simply more knowledgeable as to what actually constitutes a healthy diet.

Figure 2.1 Changes in pupils' views on the healthiness of their diet from 2008 to 2012[10]



Variations in perceptions of health

As children increased in age, they were less likely to describe the food they ate as healthy – for example, in 2012, 85% of 11 year olds said they ate healthily, decreasing to 74% of those aged 15 (p>.01, see Table 2.2).

Post-primary pupils attending the least deprived schools were more likely to describe their diets as healthy than those in schools with more FSME enrolments. Almost one in four (25%) of pupils attending schools in the most deprived group (i.e. schools with 40.1% or more of enrolments with a free school meal entitlement [FSME]) described the food they ate as 'quite unhealthy' or 'very unhealthy', in comparison with only one in five (20%) children attending schools in the least deprived group, (i.e. 10% or less FSME) (p<0.001; see Table 2.2).

[9] Gilmore G, Beattie K. Research Bulletin No.5: The influence of school nutrition policy and practice on children's eating habits. Public Health Agency. Belfast 2016. Available at http://www.publichealth.hscni.net

[10] *** 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).

Table 2.2 Post-primary pupils' views of healthiness of their diet (2012)[11] [12]

		Very or Quite healthy %	Very or Quite unhealthy %
ALL (N=1942)		**76**	**25**
Gender	Male (N=837)	75	25
	Female (N=1105)	77	24
Age**	11 years (N=54)	85	15
	12 years (N=438)	79	21
	13 years (N=468)	78	21
	14 years (N=497)	71	29
	15 years (N=467)	74	26
Proportion of school FSME ***	10% and less (N=703)	80	20
	10.1% to 20.0% (N=442)	77	23
	20.1% to 40.0% (N=624)	70	30
	40.1%+ (N=173)	75	25

Parents' views on children's eating habits

Although only 14% of the parents in this study indicated that their children consumed the recommended portions of fruit and vegetables per day, **most parents (87%) believed their children had either a 'very or quite healthy' diet**. This inflated percentage may limit the ability of health professionals, schools etc. to encourage parents to make changes in their children's diets. Interestingly this figure (87%) was higher than that reported by children (76%), possibly indicating a bias in parental reporting. Nevertheless, similar to the pattern exhibited in the data collected from pupils, **parents of post-primary children were more than twice as likely than those with primary school children to say their child had a relatively unhealthy diet** (16% and 7% respectively, p<.001) (see Table 2.3).

Table 2.3 Parents' views of healthiness of their child's diet (2012)[11]

		Very or Quite healthy %	Quite or Very unhealthy %
ALL (N=1099)		**87**	**13**
Gender*	Male (N=123)	80	20
	Female(N=971)	88	12
School type***	Primary (N=379)	93	7
	Post-primary (N=721)	84	16

[11] 'Don't know' responses have been excluded from analysis.
[12] *** 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).

There was a general consensus amongst all the adult stakeholders that children could adopt healthier diets; a view held by **87% of principals**, and **85% of teachers** (results not shown); **and 81% of parents.** Parents of post-primary pupils more readily acknowledged their children could eat more healthily than those recruited via primary schools (85% and 72% respectively; p<.001) (see Table 2.4).

Table 2.4 Do you think your child could eat more healthily? (2012, parents)[13]

		Probably could eat more healthily %	No, already does eat healthily %	Don't know %
ALL (N=1110)		**81**	**15**	**5**
Gender	Male (N=122)	75	19	6
	Female (N=982)	81	14	4
School type* **	Primary (N=379)	72	23	5
	Post-primary (N=721)	85	11	4

Knowledge of healthy eating

Parents were also asked about their knowledge of the recommended daily portions of fruit and vegetables (see Table 2.5). **Most parents were aware of how many portions of fruit and vegetables their children should be eating (84%)**. Males were more likely to be unaware of the five a day message (23%), compared to females (15%; p<.05). Nevertheless, although most parents were aware of the five-a-day message, and it was acknowledged by the majority that their children did not adhere to this message, as mentioned in the previous section, parents still view their children's diets as quite or very healthy.

Parents in the higher social groups (i.e. ABC1)[14] were more likely to know that their child should be eating the five portions of fruit and vegetables per day than those in lower social grades, (i.e. C2DE) (87% and 81% respectively; p<.05).

[13] *** 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).

[14] Occupational grouping is based on the Standard Occupation Classification (SOC) 2000 and was derived using the three classes of socio-economic classification where ABC1 is higher managerial, administrative, professional and intermediate occupation, C2D is routine and manual occupations and E is never worked, long term unemployed and retirees without pension.

Table 2.5 Proportion of parents aware of 'five a day' message (2012) [13,14]

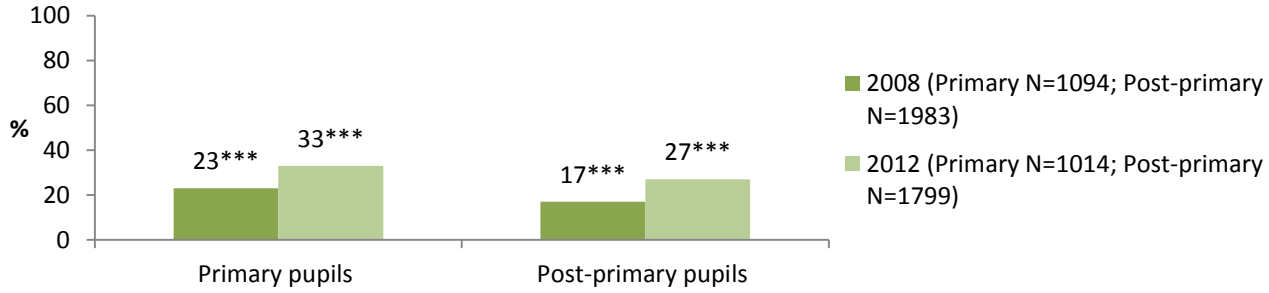
		No	Yes
ALL (N=1099)		**16%**	**84%**
Gender*	Male (N=123)	23%	77%
	Female (N=976)	15%	85%
SEG status*	ABC1 (N=647)	13%	87%
	C2DE (N=350)	19%	81%

Dietary behaviour

Across both the primary and post primary school sectors, **more children appear to be eating the recommended daily portions of fruit and vegetables compared to the baseline research** – for example, in 2008, 23% of primary children were consuming five portions of fruit and vegetables, or more, whereas by 2012, this had increased to 33% (p<.001; see Figure 2.2). Similarly, the proportion of post-primary children eating five or more portions of fruit and vegetables per day increased from 17% in 2008 to 27% in 2012 (p<.001) – although **children in post-primary school remain less likely to eat the recommended daily portions of fruit and vegetables compared to their younger counterparts in primary schools**.

Nevertheless, in spite of increased consumption of fruit and vegetables, in 2012, **66% of primary pupils and 73% of post-primary pupils still did not consume the recommended portions of fruit and vegetables per day.**

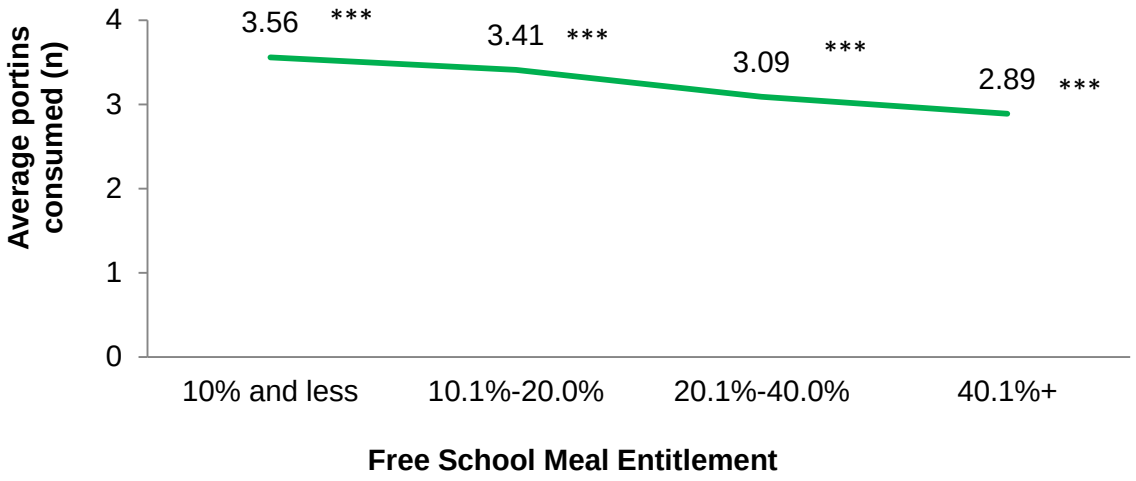
Figure 2.2 Proportion of pupils who have recommended daily portions of fruit and vegetables[15]



[15] *** 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).

Post-primary pupils consumed an average of 3.33 portions of fruit and vegetables daily, however, **post-primary pupils' attending schools in the most deprived group (i.e. those characterised by more than 40% of pupils entitled to free school meals) consumed fewer portions of fruit and vegetables** on average (2.89 portions), compared to pupils attending more affluent schools (3.56 portions in schools with less than 10% FSME) (p<.001; see Figure 2.3).

Figure 2.3 Post-primary pupils' average portions of fruit and vegetables by proportion of school FSME (2012; N=1799)[16]



Breakfast

The research further investigated any links between meal consumption and deprivation. In 2012, there was **a decline in the proportion of both primary and post-primary children who ate breakfast on a regular basis**, compared with the previous wave of the research (although this was only statistically significant for primary pupils). As is shown in Figure 2.4, the proportion of primary children who have breakfast every school day decreased from 74% in 2008 to 69% in 2012 (p<.05).

In 2012, **more than one in five post-primary children never ate breakfast on a school day (22%)**. Akin to children's own reports that their diet became less healthy with increasing age, post-primary children were consistently more likely to say they

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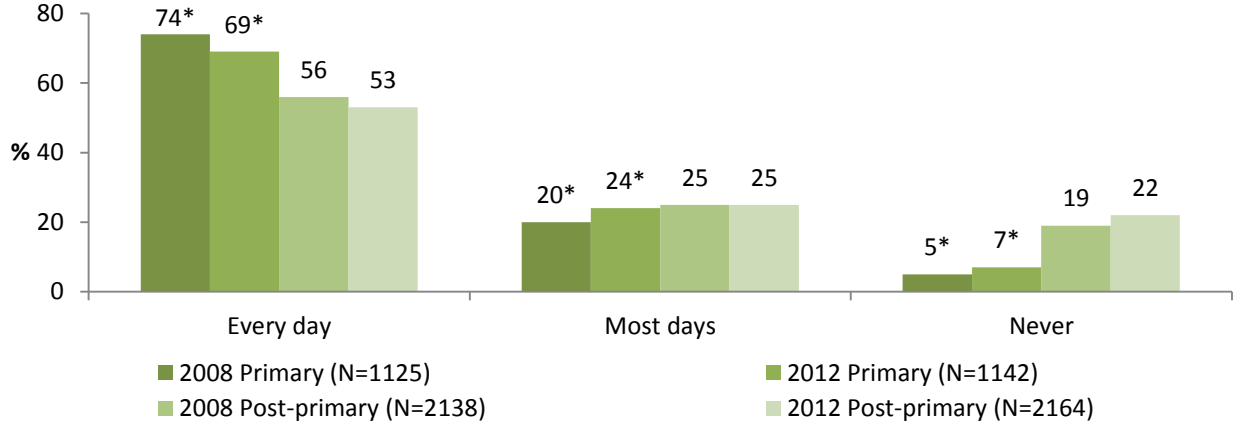
did not have breakfast every school day (22%) when compared to primary children (7%) (see Figure 2.4).

Figure 2.4 Primary and post-primary children having breakfast on school days in 2008 and 2012[17]



An age related pattern was also evident in post-primary schools with 16% of 12 year olds never eating breakfast in the morning, compared to 25% of 15 year olds ($p<0.01$; see Table 2.6).

Although this research found girls were more likely to consider a healthy diet of importance, **girls (26%) were less likely to have breakfast compared to boys (16%)** ($p<.001$; see Table 2.6). This may be an indication that children (especially girls) and parents have a limited understanding of the value of breakfast.

While children from more deprived schools were less likely to report that they had a 'healthy diet', this research also found the proportion of children who had breakfast decreased as school FSME increased. **Post-primary children attending schools in the most deprived group were more likely to miss breakfast** when compared to children attending schools with fewer FSME. For example, less than half (48%) of children in schools with more than 40% FSME enrolments had breakfast every day, compared to 64% of those attending the least deprived schools (i.e. FSME of 10% or less; $p<.001$; see Table 2.6). Although principals were asked to report on the

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availability of breakfast clubs within their schools large amounts of missing data did not allow analysis of this in relation to children's breakfast consumption.

Table 2.6 Post-primary pupils' breakfast consumption (2012)[18]

		Never %	Most days %	Every day %
ALL (N=2164)		**22**	**25**	**53**
Gender ***	Male (N=952)	16	24	60
	Female (N=1212)	26	25	49
Age **	11 years (N=63)	16	27	57
	12 years (N=499)	16	26	58
	13 years (N=522)	22	25	53
	14 years (N=551)	25	27	49
	15 years (N=510)	25	21	54
Proportion of school FSME ***	10% and less (N=754)	15	21	64
	10.1% to 20.0% (N=499)	22	26	53
	20.1% to 40.0% (N=640)	26	30	44
	40.1% + (N=191)	31	21	48

Eating lunch

Although **the majority of post-primary pupils did eat lunch every day[19] this decreased over the duration of the research, falling from 89% in 2008 to 86% in 2012** (p<.01) (results not shown).

There was also a clear pattern emerging according to the FSME ratio with each pupil's school. **Pupils attending schools in the third and fourth FSME groups (i.e. those with relatively higher proportions of FSME) were less likely to have lunch every day than those attending schools with fewer FSME** (p<.001; see Figure 2.5). For example, 82% pupils in schools with more than 40% FSME usually had lunch, compared to 91% of pupils attending schools with 10% or less FSME.

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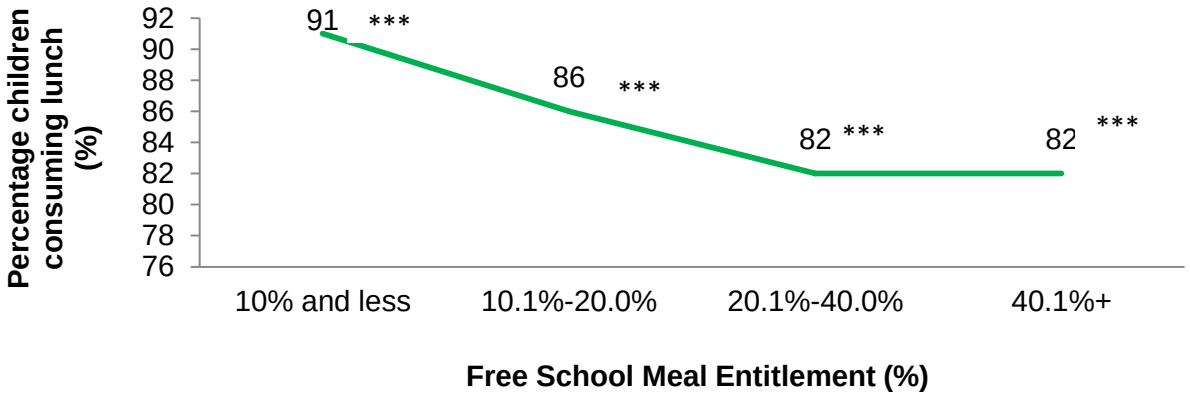
[19] Only post-primary children were asked about the frequency with which they had lunch. This was not explored with primary pupils.

There were no significant differences according to gender or age, as to whether pupils usually ate lunch or not.

Figure 2.5 Post-primary pupils who usually have lunch every day according to school FSME (2012; N=2164)[20]



Evening meal

Although the majority of pupils reported consuming an evening meal every night, there was **a significant decrease in the numbers of post-primary pupils who ate dinner on a regular basis**, falling from 91% in 2008 to 82% in 2012 (not illustrated; p<0.001).[21]

There were no significant differences according to pupil gender or age on the likelihood of eating an evening meal; however, again a pattern linked to deprivation was noted. **Pupils attending schools in the two most deprived groups (i.e. 20.1% to 40% FSME; and 40.1% + FSME) were less likely to have dinner in the evenings (74% respectively)**, in comparison to 90% of pupils attending schools with a FSME of 10% or less (p<.001; see Figure 2.6).

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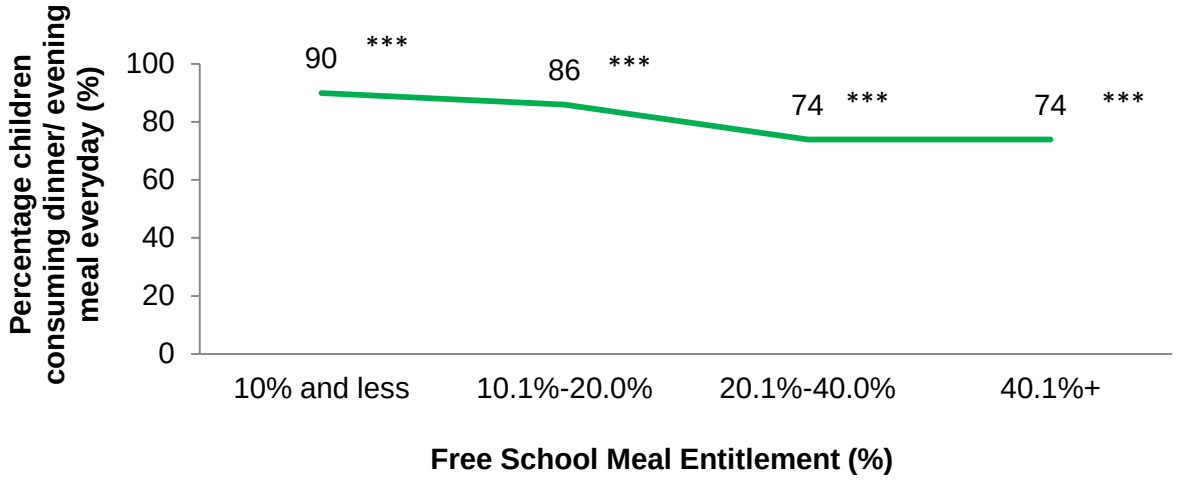
[21] Only post-primary children were asked about the frequency with which they had evening meal. This was not explored with primary pupils.

School caterers[22] also reported there were some children who did not receive a hot meal or nutritionally balanced evening meal and maintained that it was particularly important these children were encouraged to take a school meal or availed of healthy food within the school setting.

> "…It could be the only hot meal of the day… I don't know what is going on in their home life, I need to make sure that they are fed in this place – as long as they get one good hot meal in a day it is alright…" School caterer, Belfast Education and Library Board (ELB)[22]

Figure 2.6 Proportion of post-primary pupils who usually have dinner/ evening meal every day according to school FSME (2012, N=2164)[23]



Conclusion

Childhood is a vital stage for good nutrition throughout the life course. It is not only a time of rapid growth, development and activity; childhood nutrition also impacts on adult health and the prevention of chronic diseases such as cardiovascular disease, type 2 diabetes and cancer.[24]

[22] From 1 April 2015 the 5 Education and Library Boards (ELBs) have amalgamated to become the Education Authority

[23] *** 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).

[24] Scientific Advisory Committee on Nutrition SACN: The influence of maternal, fetal and child nutrition on the development of chronic disease in later life. February 2010. Available at: http://www.sacn.gov.uk/pdfs/sacn_early_nutrition_final_report_20_6_11.pdf.Accessed June 2015.

The findings in this bulletin illustrate the link between children's dietary behaviour, meals consumed and issues relating to deprivation.

- A considerable proportion of primary and post-primary pupils do not eat breakfast on a daily basis (31% and 47% respectively) while more than one in five post-primary children never eat breakfast (22%). Moreover, although the majority of pupils did eat lunch, this decreased over the duration of the research, falling from 89% in 2008 to 86% in 2012. It is suggested that more should be done to raise awareness of the importance of eating regular meals, amongst parents and pupils – particularly targeting older pupils and their parents about the importance of breakfast.
- Clear patterns linking school deprivation with a reduced likelihood of eating breakfast, lunch and evening meal, and consuming the recommended portions of fruit and vegetables are evident. This would suggest schools (and particularly those with higher FSME) should continue to provide accessible and affordable food at school breakfast clubs and lunchtime, making fruit and vegetables available at these times and encouraging pupils to avail of this.
- At a general policy level, given that less than half of post-primary pupils from schools in the most deprived group (i.e. more than 40.1% + FMSE) have breakfast on a regular basis, the possibility of providing free breakfasts in schools with higher FSME ratios, or for children from low income families (similar to free school meals) merits further investigation. An evaluation of the Free Breakfast Initiative introduced in Wales in 2005 revealed that the provision of universal free breakfasts disproportionately benefitted children from more deprived schools. The evaluation demonstrated a decline in breakfast skipping in schools with higher levels of FSME, and increased consumption of healthy breakfast items[25,26]
- The decreasing numbers of children who have an evening meal every day is of concern (falling from 91% in 2008 to 82% in 2012), reiterating the importance of the implementation of nutritional standards for school meals and other food in

[25] Data derived from the evaluation of the Welsh Assembly Government's Free School Breakfast Initiative found that deprivation is associated with breakfast skipping, and negative attitudes towards breakfast. Deprivation was positively associated with consumption of 'unhealthy' breakfast items, such as sweet snacks and crisps. (Moore, G. et al (2007). Associations between deprivation, attitudes towards eating breakfast and breakfast eating behaviours in 9 – 11 year olds. *Public Health Nutrition*: 10(6), 582-589.

[26] Moore et al. (2013) Impacts of the Primary School Free Breakfast Initiative on socio-economic inequalities in breakfast consumption among 9 – 11 year old school children in Wales. *Public Health Nutrition*, 14 (2), p 219-226.

schools. Moreover, given that more than one in four (26%) of children attending the most deprived schools do not usually have an evening meal, it is especially important that the uptake of school meals is encouraged - and free school meals in particular - as a way of ensuring that school children (particularly those within low income families) get a nutritionally balanced meal each day.