

Comparison of two schools in Kingston-upon-Hull.

Two primary schools were chosen to provide a representation of Hull's free healthy school meals programme (Eat Well Do Well). The schools were selected based on the number of children entitled to receive free school meals. School A had a low number of children classed as eligible for free school meals. School B had a high number of children classed as eligible for free school meals. These schools were selected to provide a comparison between the different socio economic areas of the city. Free school meal benefit is means tested, based on the parents or carers income, eligible children come from homes where the parents are in receipt of income support, income based job seekers allowance, support under the Immigration and Asylum Act or are in receipt of child tax credit with an annual income of less than £13,910 (Hull CC, 2005). A school with a high entitlement of free school meals are generally situated in areas of higher social deprivation.

School A

School A had 9.8% of children classed as eligible for free school meals. This school is located within an area described by the Association of Public Health Observatory (APHO, 2006) as amongst the second most deprived quartile. The school received its last Ofsted (Office for Standards in Education) inspection in 2002. The Ofsted report indicated that almost all pupils live in the suburban area of privately owned houses around the school. Children joining the school had an overall attainment level above that expected of children of their age and pupil attainment is well above average by the time they leave school. The school is classified as a healthy school and was awarded National Healthy School status in April 2004.

School B

School B had 47.4% of children eligible for free school meals. This school is located within the APHO (2006) category of the most deprived quartile. The school received its last Ofsted inspection in 2007 which indicated that the majority of pupils lived in the immediate area in council owned accommodation in a community faced with many issues of social deprivation. Attainment on entry to the school was well below average and pupil standards did not meet national expectations in English, mathematics and science by the age of 11. The school is classified as a healthy school and was awarded National Healthy School status in June 2007.

Food consumption was assessed over five consecutive days in both schools. In school A 37 children (9 boys and 28 girls) participated. In school B 39 children (20 boys and 19 girls) participated.

The picture below visually displays the food served in both schools on one of the study days. In school A the children were served vegetables with every meal, in school B children were able to refuse the vegetables if they wished. These pictures are typical of children's food consumption throughout the study, children tended to eat the foods they liked and waste the rest.

The meal consists of roast turkey, stuffing, gravy, potatoes and in school A, carrots and green beans.

Example of meals before and after consumption in school A and B

Example of a meal in school A

Before

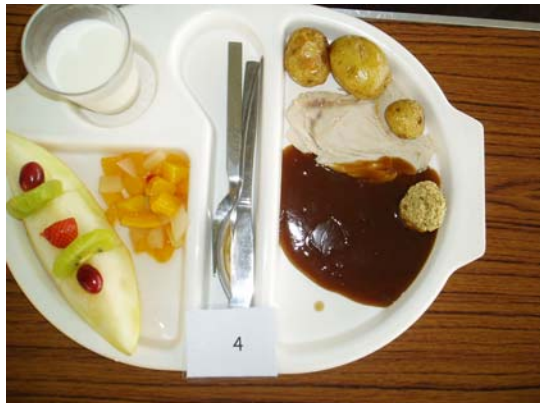


After

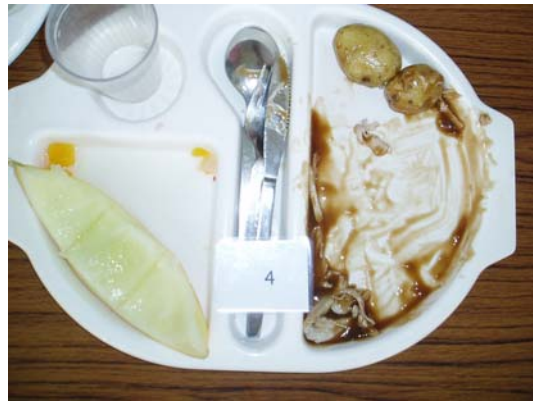


Example of a meal in school B

Before



After



Although the after dinner picture from school B appears to present that this child consumed more food, this is deceiving as no vegetables were provided. Both these children consumed the meat, stuffing, gravy and one potato, but the child in school A also consumed a little of the carrots provided. Each day the consumption of a few of the vegetables provided in school A helps to provide nutrients such as fibre, zinc, Vitamin A and C.

The following table presents the mean nutrient intakes at lunch for the two groups of children assessed.

Differences between the mean nutrient intakes from hot school dinners in the two schools

Nutrients	Group	N	CWT	Means	SD	Significance p value <0.05
Energy (kcal)	School A	37	557	397.65	0.53	0.298
	School B	39		367.21	0.53	
Total Fat (g)	School A	37	≤ 21.6	8.12	3.44	0.341
	School B	39		7.43	2.78	
Saturated Fat (g)	School A	37	≤ 6.8	2.80	1.36	0.980
	School B	39		2.80	1.36	
Protein (g)	School A	37	≥ 8.5	20.82	7.08	0.901
	School B	39		21.03	6.90	
Carbohydrate (g)	School A	37	≥ 74.2	64.29	21.73	0.204
	School B	39		57.55	23.92	
NME Sugar (g)	School A	37	≤ 16.3	11.94	3.92	<u>0.000</u>
	School B	39		6.99	4.24	
Fibre (g)	School A	37	≥ 4.5	3.21	1.64	0.238
	School B	39		2.76	1.67	
Iron (mg)	School A	37	≥ 3.5	1.93	0.69	<u>0.006</u>
	School B	39		1.52	0.59	
Zinc (mg)	School A	37	≥ 2.8	1.82	0.71	0.714
	School B	39		1.76	0.72	
Calcium (mg)	School A	37	≥ 220	291.08	147.36	0.901
	School B	39		295.74	177.04	
Vitamin A (µg)	School A	37	≥ 200	128.95	88.94	0.116
	School B	39		96.04	85.51	
Vitamin C (mg)	School A	37	≥ 12	34.65	17.56	0.549
	School B	39		32.51	13.14	
Folate (µg)	School A	37	≥ 60	60.32	28.54	0.912
	School B	39		61.03	26.54	
Sodium (mg)	School A	37	≤ 600	374.84	140.58	0.181
	School B	39		334.67	118.43	

Significant results are highlighted in red and underlined.

An independent T test highlighted that despite children from the two schools being provided with the same food choices, actual food intake differed with a statistically significant difference between the intakes of two nutrients; non-milk extrinsic (NME) sugars and iron. NME sugars were found to be consumed at a significantly greater level by children from school A than those children in school B. This finding is particularly interesting because the food served in school B actually offered more NME sugars due to the larger portion sizes of scones, fruit mousse dessert and fruit juice. In both schools children consumed more than twice the recommended protein intakes, with children from school A having the highest intakes. Iron intakes were found to differ significantly between the two schools. In neither school did children's average iron intake meet the CWT recommended daily guidelines, average intakes were about a half of the recommended requirement. On average children in school A consumed more iron from lunch than children in school B, this difference was statistically significant. The foods contributing towards the higher iron intakes in children from school A were mainly provided from the desserts, followed by

vegetables including baked beans and then by the meat sources consumed. Although statistical significance was not found between the remaining nutrients, it is interesting to note that children from school A consumed greater levels of most nutrients; energy, fat and carbohydrate as well as fibre, zinc, calcium, vitamin A and vitamin C.

One of the reasons for the increased nutrient intakes in children from school A may be attributable to the provision of vegetables and potatoes to all children. This led to increased waste, but resulted in children consuming a little of these items.

Conclusion

Children tended to eat the foods they liked and leave the rest, potatoes and vegetables were often wasted resulting in poor macro and micro nutrient intakes. Children were offered choices each day which allowed similar foods to be consumed on consecutive days and therefore did not obtain the variety of micronutrients required. Children had intakes of carbohydrates, fibre, iron, zinc and vitamin A below the recommended amounts when compared to the CWT guidelines. This is a considerable finding as both schools were working towards the new nutritional guidelines in order to improve children's intake and therefore possibly their health and academic attainment.