Nutrient and Energy Intakes of School Children During the School Day

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Introduction

Various studies carried out concerning school children's diets, have looked at the effects and potential effects nutrient intakes in specific contexts. The results of these studies indicate that the performance, cognition, concentration and behaviour of pupils are linked to nutritional intake.

The major aim of this research was to explore the quality of average daily nutrient intakes of males and females, aged between 13-17 years by comparison with current, dietary reference values. This research was carried out at two Leicestershire schools serving the same region of the county.

There is potential for further research on this subject as there is a shortage of data available from quality research studies.

Process

A questionnaire was designed in order to provide information on the food habits of school pupils. This was distributed. along with a food diary, to pupils from two schools in Leicester, one of which was a middle school (ages 13 to 14 years) and the other was an upper school (ages 16 to 17 years). The school days on which the data was collected were chosen at random and the children were asked to record the nature and quantity of all food and drink consumed over the previous 24 hour period. The food intake data was analysed using the dietary analysis software package, Microdiet (Downlees Systems Ltd.) . The results were compared to the DRVs based on the relevant age groups and sex of the participants.

Results

A total of 179 middle school students (85 girls and 94 boys) and 33 sixth form students (27 girls and 6 boys) took part in this study.

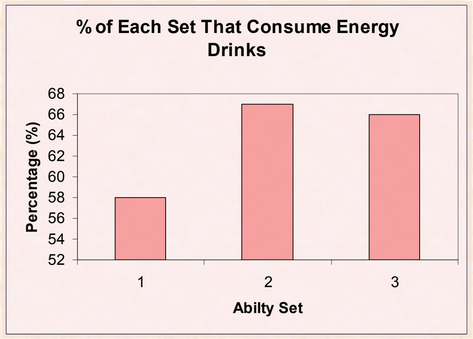

Figure 1: Estimated number of school students aged 13-14 years that consume energy drinks

As the results in figure 1 show, on average, 64% of the high school students consumed energy drinks.

In regards to calcium, in set 2 only 3.23% of males reached the RNI whereas around 30% females, in all 3 sets, reached the RNI. 87.1% of males, in set 1, reached the LRNI in iron however no female students reached the RNI in iron.

The majority of students in all 3 sets reached 100% of LRNI and EAR in thiamine. More students in set 1, on average, consumed 100% or more on all coma triplets than both the other 2 sets. More males in set 3 consumed higher amounts of riboflavin than set 2 as more male students in set 3 reached 100% or more in the coma triplets than the males in set 2. All female students in set 1 met the LRNI for vitamin C. In set 3 the male students consumed more vitamin C than the female students and this same pattern is evident in set 1. All the results for adequacy of diet show an uneven pattern highlighting that the adequacy of diet is not affected by academic ability or by gender.

The daily recommended calorie intake for boys 11 to 14 years is 2220kcal and for girls of the same age is 1845kcal (Department of Health, 1991). There results obtained show that girls are under eating, on average, by 430.44 kcal per day and that boys are under eating by, on average, 657.71kcal per day. Also this shows that girls are consuming less energy than boys however girls the gap between the average energy consumed and the recommended daily guideline is smaller for girls than it is for boys indicating.

Table 1: Intake of selected minerals and vitamins by males and females in set 3 aged 13 to 14 years

Set 3	LRNI		EAR		RNI	
	Females %	Males %	Females %	Males %	Females %	Males %
Calcium	55.56	71.88	48.15	18.75	33.33	18.75
Iron	44.44	65.63	18.52	40.63	7.41	21.88
Thiamine	100	100	88.89	100	81.48	96.88
Riboflavin	51.85	68.75	51.85	59.38	48.15	37.5
Vitamin C	88.89	90.63	77.78	81.25	44.44	71.88
Retinol Equiv	55.56	50	25.93	34.38	14.82	21.88

Conclusion

Middle school children in ability set 2 are more likely to consume energy drinks.

Ability set 3 consume more than 8 cans/ bottles of energy drinks per week, compared to ability set 1 which are more likely to consume between 1 to 3 cans/ bottles p/week.

Middle school students consume more calcium and iron than the upper school students.

Middle school students in ability set 1 consume more calcium, iron, thiamine, riboflavin, vitamin C and retinol equivalent. However the female students in ability set 3 consume the most iron.

The lower ability set female students from the middle school perceived their diet to be healthier. More male students in the higher set believed they had a healthy diet.

Middle school students in set 1 walk to school more often than the 2 ability sets.

More middle students in the highest ability set take part in organised sports.

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Literature Cited

Department of Health (1991) Dietary Reference Values for Food Energy and Nutrients for the United Kingdom, The Stationary Office, Norwich, England P:26.