

## **'Please Sir, can I have some more?'**

The quote from Oliver Twist is well known as the young lad pleads for more gruel to feed his hungry stomach.

The same phrase is not so likely to be heard today, or certainly not in the hunger-pained way expressed by Oliver, but then food didn't taste so good back then. The majority of children in Britain today rarely feel that tummy-rumbling feeling of hunger, and this may be leading to the increases in overweight children.

Described in the International Journal of Obesity, researchers have found that the energy density of the diet consumed at age 7, but not at the younger age of 5, is a risk factor for excess body fat by the age of 9.

The energy density of the diet (how tightly energy is packed into food) has been linked by the World Health Organisation with the increase in obesity. A high energy dense diet is typified by foods high in fat and sugar with little or no fruit and vegetables. The effect energy density has on the appetite regulation system is one of the important mechanisms explaining why we easily overeat without even noticing.

Based on records of the diets of over 500 children participating in the Children of the 90s study, scientists from MRC Human Nutrition Research, Cambridge and the University of Bristol looked at food consumption at aged 5 and 7 years. The same children then had their body fat measured at age 9. The relationship between excess body fat and the energy density of their previous diets were assessed.

Dr Pauline Emmett, who was in charge of collecting the dietary information, explains that parents recorded everything their children ate over three days at age 5 and then again at age 7.

The energy density of the diet at age 5 was not related to body fatness by the age of 9. However a 1kJ/g rise in the energy density of the diet at age 7 increased the odds of having excess fat at age 9 by 36%. This was despite allowing for possible confounding factors such as social status, parental fatness, TV watching and how fat the children were to start with. Interestingly it was found that the energy density of the diet tracked with age. Children eating a high energy dense diet at 5 were very likely to do so at 7 also.

Laura Johnson, author of the report explains the possible mechanism "We think younger children respond to their biological hunger cues." The older age group are possibly distracted more by external cues to eat such as taste, portion size, meal times and so on, which seems to lead to an accidental over-consumption of energy when food has a high energy density".

The appetite regulation system appears to be very well controlled in infants and young children. When given the chance, children eat when they are hungry, and don't when they are not. Food entering the stomach triggers a series of feedback loops to the appetite control centre in the brain stop to us feeding once we have consumed enough energy – we feel full. As we get older, these appetite signals are overridden by social cues such as taste, smell, palatability, or the pressure to 'clean the plate' and the feedback to stop eating is not 'heard'.

Dr Susan Jebb, Head of Nutrition and Health Research at MRC Human Nutrition Research commented, "This study highlights the need to develop policy initiatives which target energy dense foods as a specific risk factor for obesity as part of a broader strategy to encourage healthier choices".

The findings from this study suggest that despite the energy density of the diet at age 5 the mechanism to feel full and stop eating works well. However by age 7, the high energy density of the diet is providing more energy than is required and this is reflected by the higher body fat at age 9.

Maybe if we held back with the energy dense options and helped children to recognise and respond to the true sense of hunger we may reduce their risk of obesity later in life.

ENDS

Notes to Editors:

The Children of the 90s study (also known as ALSPAC - The Avon Longitudinal Study of Parents and Children) is a unique ongoing research project based in the University of Bristol. It enrolled 14,000 mothers during pregnancy in 1991-2 and has followed most of the children and parents in minute detail ever since.

Medical Research Council Collaborative Centre for Human Nutrition Research, Cambridge, carries out scientific research into relationships between nutrition and health, of national and international priority, through partnerships with other academic groups, governments, industry and others. It is also an independent, authoritative source of scientific advice and information.

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