Epidemic of obesity in UK children

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Data from a nationally representative sample of 2630 English children show that the frequency of overweight ranged from 22% at age 6 years to 31% at age 15 years and that of obesity ranged from 10% at age 6 years to 17% at age 15 years. The definition of obesity in childhood and adolescence has been debated, but now the use of body-mass index (BMI; weight/height$^2$) has been recommended. In children BMI must be interpreted in relation to population reference data. The consensus is that children and adolescents with BMI above the 85th centile should be defined as overweight, and those with BMI above the 95th centile as obese. The obesity definition has clinical meaning: children with BMI above the 95th centile are likely to be relatively fat, and obesity defined in this way has a strong tendency to persist and is associated with morbidity. The aim of our study was to provide current estimates of overweight and obesity prevalence in English children and adolescents.

Prevalence of overweight and obesity

The Health Survey for England 1996 (Data Archive, University of Essex) was a cross-sectional survey in a representative sample of English children and adolescents. Height (to 0·1 cm with a portable stadiometer) and weight (to 0·5 kg, with portable scales, in light indoor clothing) were measured in 2630 children aged 6–15 years. The survey was approved by relevant ethics committees. BMI was compared with UK reference data for BMI by means of software provided by the Child Growth Foundation (London). These reference data represent a compilation of 11 UK surveys carried out between 1978 and 1990. Current recommendations$^7$ set the expected frequency of overweight at 15% (BMI >85th centile) and obesity at 5% (BMI >95th centile). Changes in BMI reference data to take account of secular trends in BMI would obscure those trends so the UK reference data were used as a baseline against which subsequent surveys of obesity prevalence should be compared. Differences between observed and expected frequencies above the cut-offs for overweight and obesity were tested for significance by y$^2$ goodness-of-fit tests.

Frequencies of overweight and obesity significantly (p<0·01) exceeded expected frequencies in almost all age-groups (table). Differences in the frequency of obesity between boys and girls were not significant. The frequency of obesity was generally higher in the older age-groups (figure).

These findings show that the epidemic of obesity in the UK is not confined to adults, and that overweight and obesity are
much more common than expected in English children and adolescents. We have described elsewhere a high frequency of overweight and obesity in young children (3–5 years) in the UK, and this study shows that the frequency increases throughout childhood (figure). Our results do not provide encouragement that public-health targets aimed at reducing obesity can be met.

We have described a rapid increase in overweight and obesity, between the construction of the UK 1978–90 reference data and the time of the Health Survey (1996). This increase reflects a rapid shift towards positive energy balance resulting from societal changes in lifestyle, which altered population energy intake, energy expenditure, or both. As in the USA, these changes are apparent once children reach the age of 3–4 years, and the evidence for lower energy expenditure is stronger than that for increased energy intake. In UK children aged 1.5–4.5 years, mean energy intake fell by 20% between 1967 and 1992, yet the frequencies of overweight and obesity increased during this period. Although there are no comparable data for older children and adolescents in the UK, this trend constitutes strong, if indirect, evidence for reduced habitual physical activity as the major cause of increasing obesity in children and adolescents.

Inactivity, particularly watching television, is predictive of subsequent overweight and obesity in children and adolescents, and the amount of time spent watching television by 4–15-year-olds in the UK has doubled since the 1960s. In certain diseases of childhood, such as childhood leukaemia, lifestyle changes associated with lower habitual activity are also known to promote obesity.

Our study will have underestimated the magnitude of the obesity problem in children and adolescents in the UK for several reasons. First, secular trends in fatness of children suggest that prevalence of obesity will be higher in Scotland than in England. However, no Scottish data on obesity prevalence are available (children were not included in the equivalent health survey for Scotland). Second, the definition of obesity we used, based on BMI, underestimates obesity prevalence. The BMI is a proxy for excessive fatness rather than a direct measure of fatness, and is specific (identifies few non-obese children as such) but insensitive (fails to identify large numbers of excessively fat children). Finally, we analysed the most recently available Health Survey data (1996), but a continuation of the trends we have described would lead to even higher prevalence of overweight and obesity. In view of the adverse health implications of obesity in childhood and adolescence, and increasing evidence that childhood overweight and obesity make significant contributions to adult disease, greater public-health efforts to address the problem should be contemplated.

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Association between cerebral palsy and coagulase-negative staphylococci

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Coagulase-negative staphylococci were cultured from the space between the placental membranes at delivery in four of five neonates who were later diagnosed with cerebral palsy, and in 26 of 102 neonates who were not found to have the disorder (p=0.02).

During the past few years, several investigators, most notably Nelson and colleagues, have shown that certain indicators of perinatal infection, such as chorioamnionitis and premature rupture of the placental membranes, predict cerebral palsy independently of low birthweight and preterm birth. However, no specific bacteria have been significantly associated with cerebral palsy.

To study further this relation, we took cultures from the placental chorioamniotic space of mothers taking part in the Magnesium and Neurologic Endpoints (MagNET) Trial immediately after preterm delivery. With a technique modified from that of Hillier and colleagues, which avoids bacterial contamination from the vagina, we obtained cultures for aerobes, anaerobes, ureaplasma, mycoplasma, and chlamydia, by aseptic separation of the amnion from the chorion; we then cultured the inner surfaces distant from the opening in the membranes. Of the preterm neonates studied in the MagNET trial, the presence or absence of cerebral palsy at 18 months of age was known in 122. We obtained cultures from 107 (88%) of these neonates. Babies from whom cultures were not obtained did not differ in any substantial way from those in whom cultures were obtained.

Of the 107 cultures, 37 grew no microorganisms, 41 grew pure isolates of one species, and 29 grew mixed isolates. Coagulase-negative staphylococci were the bacteria most commonly cultured at delivery: 30 of 107 cultures were positive. Escherichia coli, mycoplasma, and ureaplasma were the next most prevalent, being found in 14 of 107, 13 of 107, and seven of 107, respectively. At the 18-month assessment,