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Is a 'prudent' pattern of eating in pregnancy associated with adiposity in early childhood? Findings from the Southampton Women's Survey

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Experimental studies provide clear evidence that a number of different types of dietary manipulation in pregnancy alter fetal development, changing body composition and adiposity in the offspring. Proposed mechanisms include alterations to appetite regulation resulting in hyperphagia in the offspring and an increased preference for high-fat or other energy-dense foods[1]. Much less is known about human pregnancy and the extent to which qualitative variations in maternal diet in pregnancy may influence body composition of the offspring.

The aim of the present study was to examine the relationship between quality of the maternal diet in pregnancy and fat mass determined by dual-energy X-ray absorptiometry (DXA) at the age of 4 years, in a large general-population sample of mothers and children in the Southampton Women's Survey (SWS). The SWS is a study of 12 583 non-pregnant women aged 20–34 years resident in the city of Southampton, UK. SWS women who become pregnant are followed up in early (EP) and late (LP) pregnancy, when diet is assessed by FFQ[2]. As an index of diet quality individual's scores were used for a principal component analysis-defined dietary pattern, the 'prudent' pattern of diet, in EP and LP[3]. High prudent-diet scores indicate a diet characterised by high consumption of fruit and vegetables, wholemeal bread, rice and pasta, while low scores indicate a diet characterised by high consumption of chips, white bread, red and processed meat, full-fat dairy products, sugar and soft drinks. A total of 556 children born between 1999 and 2003 were followed up at 4 years for DXA assessment of body composition. Fat mass was adjusted for the influence of child's height by calculating a fat mass index (total fat mass (kg)/height $(m)^2$)[4]. The fat mass index was independent of height at 4 years ($P=0.67$).

Prudent-diet score in EP and LP was inversely related to fat mass ($P=0.033$ and $P=0.018$ respectively) and to the fat mass index ($P=0.018$ and $P=0.005$ respectively), but BMI at 4 years was not related to prudent-diet score in pregnancy. Prudent-diet score in pregnancy was positively associated with the length of time the child was breast-fed in infancy (r 0.38 and r 0.40 for EP and LP respectively). After taking account of breast-feeding duration there were no longer independent relationships between prudent-diet score in EP or LP and fat mass or fat mass index at 4 years.

The data suggest that variations in infant diet may have a greater impact on adiposity in early childhood than maternal diet in pregnancy. No evidence was found of independent effects of qualitative variations in maternal diet in pregnancy on offspring adiposity in early childhood.

1. Bayol SA, Farrington SJ & Stickland NC (2007) *Br J Nutr* **98**, 843–851.
2. Robinson S, Godfrey K, Osmond C, Cox V & Barker D (1996) *Eur J Clin Nutr* **50**, 302–308.
3. Crozier SR, Inskip HM, Godfrey KM & Robinson SM (2008) *Br J Nutr* **99**, 869–875.
4. Wells JC, Cole TJ & ALSPAC Study Team (2002) *Int J Obes (Lond)* **26**, 947–952.