Results: Median (IQR) intakes of folate and B12 were 96 (IQR: 69, 131) μg/d and 0.72 (IQR: 0.3, 1.1) μg/d. The diets of 28%, 46% and 17% of women were adequate in B12, folate and in both nutrients respectively. However, assuming 30% cooking losses, 82% women had inadequate dietary folate. The GLV food group (mainly fenugreek, spinach, green amaranth) contributed the highest median daily folate intake 48 μg/day followed by 'other vegetables' (mainly cauliflower, ladies finger, cabbage) 14 μg/day and then pulses (mainly cow pea, red gram dal, bengal gram) 12 μg/day. The highest median B12 intake was contributed by non-vegetarian foods (mainly fish, eggs) 0.6 μg/day and milk 0.1 μ/day. Vitamin B12 intakes were higher in better-educated women ($p < 0.0001$). Folate intakes were unrelated to education.
Conclusions: Many women of reproductive age in this urban slum population have inadequate folate and vitamin B12 intakes.

P2-82 Maternal predictors of fetal size in early pregnancy; the Pune Maternal Nutrition Study

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Aims: To examine associations of maternal size, diet and micronutrient status with fetal size at 18 weeks gestation.
Study design: The Pune Maternal Nutrition Study is a community-based prospective follow-up study of rural Indian women and their offspring.
Subjects: 638 pregnant women whose gestation according to their last menstrual period date differed by less than 2 weeks from gestation estimated from fetal ultrasound measurements. The women's anthropometry before pregnancy, and that of their husbands, was measured. At 18 weeks gestation, maternal diet was assessed by questionnaire (FFQ) and micronutrient status was measured (red cell folate, and plasma vitamin B12, methylmalonic acid [MMA] and ferritin concentrations).
Outcome measures: Fetal bi-parietal diameter (BPD), head circumference (HC), abdominal circumference (AC) and femur length (FL) at 18 weeks gestation.
Results: All fetal measurements were directly associated with maternal folate concentration, calcium intake, and frequency of intake of dairy products and non-vegetarian foods ($p < 0.05$ for all). In addition, BPD was inversely associated with maternal MMA concentration ($p = 0.03$), AC was directly associated with maternal vitamin B12 concentration ($p = 0.05$), and AC ($p = 0.05$) and HC ($p = 0.01$) were directly associated with maternal fat intake. There were no associations between fetal size at 18 weeks and maternal pre-pregnant or paternal size, maternal parity, energy or protein intakes, frequency of green leafy vegetable intake, haemoglobin or ferritin concentrations, or socio-economic status. The above associations were unchanged after adjusting for potential confounding variables.
Conclusion: In these rural Indian mothers, diet and nutritional status were predictors of fetal size in early pregnancy.

P2-83 Maternal B12, folate during pregnancy: relationships with gestational diabetes, offspring size and glucose/insulin concentrations

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Aims: To test the hypothesis that low plasma vitamin B12 and high plasma folate in pregnant mothers is associated with higher offspring adiposity and altered glucose/insulin metabolism.
Study design: Prospective observational study.
Subjects: Offspring of 654 women attending the antenatal clinics and delivering live babies at the Holdsworth Memorial Hospital, Mysore, India.
Outcome measures: Maternal gestational diabetes (GDM, Carpenter-Coustan criteria); offspring anthropometry at birth, 5 years, and plasma glucose/insulin concentrations at 5 years.
Results: Vitamin B12 deficiency (<150 pmol/l) was observed in 41% and folate deficiency (<7 nmol/l) in 5% of women. B12-deficient status was associated with higher GDM risk (OR = 1.9, $P = 0.057$, adjusted for age, socio-economic status), especially in the presence of higher folate (highest folate tertile; OR = 4.8, $P = 0.01$). Maternal vitamin B12 was positively associated with neonatal ponderal index, independent of maternal GDM ($P = 0.006$, adjusted for gestation, sex). Maternal folate was positively associated with neonatal mid-arm circumference (MUAC, $P = 0.03$); 5-year weight ($P = 0.002$), height ($P < 0.001$), MUAC ($P = 0.01$) and head circumference ($P = 0.001$, adjusted for age, sex). Association with birth MUAC was lost after adjusting for maternal GDM. In vitamin B12-deficient mothers, higher folate was associated with larger newborn triceps skinfolds ($P = 0.05$), but the significance was lost after adjusting for maternal GDM ($P = 0.1$). There was no association of maternal B12/folate status with offspring glucose and insulin concentrations.
Conclusions: Vitamin B12 deficiency combined with adequate/high folate increases the risk of GDM. This may partly explain their association with neonatal adiposity. Maternal B12 and folate are important predictors of neonatal and childhood size.

P2-84 Long-term effects of maternal vitamin D status during pregnancy on offspring size and glucose/insulin concentrations

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Aims: To test the hypothesis that maternal vitamin D deficiency/insufficiency during pregnancy has long-term effects on the offspring, including impaired skeletal growth, reduced insulin sensitivity and secretion, and impaired glucose tolerance (IGT).
Study design: Prospective observational study.
Subjects: Children of 559 women who had serum 25-hydroxy vitamin D (25(OH)D) concentrations measured at 30±2 weeks gestation.
Outcome measures: Anthropometry at birth, 1, 2 and 5-years of age; lean-mass (bio-impedance method), glycated haemoglobin (HbA1c%), and plasma glucose/insulin concentrations measured in an oral glucose tolerance test at 5 years.
Results: Vitamin D deficiency/insufficiency [25(OH)D < 50 nmol/l] was observed in 67% of the mothers. Maternal 25(OH)D status was unrelated to the risk of gestational diabetes or to neonatal size. There were positive associations between maternal 25(OH)D and offspring arm-muscle area (AMA) at one- ($P = 0.05$), two- ($P < 0.001$) and five-years of age ($P = 0.01$, adjusted for sex, age), but no associations with height or 5-year lean mass. Association with one-year AMA was lost after additionally adjusting for parental size and socio-economic status. At 5-years, children in the 'deficiency/insufficiency' group had higher HbA1c% (5.6) than those in the 'normal' group (5.4, $P = 0.04$; $P = 0.52$ adjusted for maternal gestational diabetes). The prevalence of IGT was higher among these children (N = 16, 4.8%) compared to the normal-25(OH)D group (N = 3, 1.9%), but the association was not statistically significant ($P = 0.1$). There were no associations between maternal 25(OH)D concentrations and markers of offspring insulin resistance (IR-HOMA) or secretion (30-minute insulin increment).
Conclusions: Low maternal vitamin D status in pregnancy may impair offspring muscle growth and glucose tolerance.