

Main Outcome Measures Prevalence, among singleton pregnancies, of late miscarriage (20–23 weeks gestation), termination of pregnancy for fetal anomaly (≥ 20 weeks gestation), stillbirth (≥ 24 weeks gestation), fetal death (miscarriage or antepartum stillbirth), perinatal mortality, neonatal mortality, post-neonatal mortality, and all infant mortality. Crude and adjusted (for maternal age, gestational age, where appropriate, birth weight, standardised for sex and gestational age, ethnicity, cigarette smoking status, index of multiple deprivation, and sex of infant/fetus) ORs of each outcome among maternal obese (BMI ≥ 30 kg/m²) compared to maternal recommended BMI (BMI 18.5–24.9 kg/m²).

Results Compared to women of recommended BMI, obese women were at significantly greater risk of a fetal death (adjusted odds ratio (aOR) 2.94 (95% CI 2.02 to 4.27), $p < 0.001$), including late miscarriage (aOR 3.27 (95% CI 1.43 to 7.44), $p = 0.005$) and antepartum stillbirth (aOR 2.86 (95% CI 1.88 to 4.35), $p < 0.001$), perinatal death (aOR 2.54 (95% CI 1.70 to 3.79), $p < 0.001$), including stillbirth (aOR 2.77 (95% CI 1.86 to 4.13), $p < 0.001$) and early neonatal death (aOR 3.00 (95% CI 1.12 to 8.03), $p = 0.03$), and infant death (aOR 2.49 (95% CI 1.34 to 4.62), $p = 0.004$), including neonatal death (aOR 2.57 (95% CI 1.13 to 5.88), $p = 0.03$). There was no significant association between maternal obesity and post-neonatal death (aOR 2.27 (95% CI 0.89 to 5.80), $p = 0.09$). The effect of obesity on risk of stillbirth was greater among small-for-gestational-age fetuses, but less among current smokers. Except for higher rates of pre-eclampsia among stillbirths, no specific cause of death could explain the increased odds of fetal and infant death among the obese.

Conclusion Early-pregnancy obesity is significantly associated with fetal and infant death, independent of the known relationship with congenital anomalies. Further studies are required to investigate the specific mechanisms involved. In the meantime, women should be made aware of these risks and supported to optimise their weight before pregnancy.

P12 MATERNAL SMOKING DURING PREGNANCY AND OFFSPRING BONE MASS AT AGE 9 YEARS

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¹C Macdonald-Wallis, ²J H Tobias, ¹G Davey Smith, ¹D A Lawlor. ¹MRC Centre for Causal Analyses in Translational Epidemiology, Department of Social Medicine, University of Bristol, Bristol, UK; ²Academic Rheumatology, Clinical Science at North Bristol, University of Bristol, Bristol, UK

Objective Studies in neonates have demonstrated an adverse relationship between maternal smoking during pregnancy and fetal bone mineral accrual. We aimed to investigate an intrauterine influence of maternal smoking in pregnancy on offspring bone mass during childhood.

Design Prospective birth cohort study: the Avon Longitudinal Study of Parents and Children (ALSPAC).

Setting Mothers were resident in Avon, UK during pregnancy and had expected delivery dates between April 1991 and December 1992.

Participants and Methods Our analysis included 7121 children attending a research clinic at mean age 9.9 years. We used multiple regression models to compare associations of maternal and paternal smoking at the time of pregnancy with measures of bone size and density in the children, since a greater maternal association would provide evidence of a direct intrauterine effect on the fetus. Multivariate multiple imputations were used to account for missing data.

Main Outcome Measures DXA measured total body less head (TBLH) and spine bone mineral content (BMC), bone area (BA) and bone mineral density (BMD).

Results Maternal smoking in any trimester of pregnancy was associated with increased TBLH BMC, BA and BMD in girls (mean difference (95% CI) (using sex-specific SD scores): 0.13 (0.05 to

0.22), 0.13 (0.04 to 0.21) and 0.13 (0.04 to 0.22), respectively) but not in boys (0.01 (−0.07 to 0.09), 0.00 (−0.08 to 0.08), 0.04 (−0.05 to 0.12)) in confounder-adjusted models. It was also associated with spine BMC, BA and BMD in girls (0.13 (0.03 to 0.23), 0.12 (0.03 to 0.22), 0.10 (0.00 to 0.21)) but not in boys (0.03 (−0.06 to 0.12), 0.00 (−0.09 to 0.09), 0.05 (−0.04 to 0.14)). Paternal smoking associations were similar, with no statistical evidence for a difference between maternal and paternal associations (all p values > 0.15). Maternal associations increased on adjustment for offspring birth weight and gestational age but attenuated to the null on adjustment for the child's height and weight at age 9 years. Further investigation indicated that these relationships were driven mainly by offspring weight rather than height.

Conclusions There was little evidence of a relationship between maternal smoking during pregnancy and bone mass in boys. Our parental comparisons and multivariable analyses suggested that the positive associations between maternal smoking and bone mass in girls were likely to be attributable to shared familial characteristics related to offspring adiposity rather than an intrauterine mechanism.

P13 ASSOCIATION OF PRENATAL AND POSTNATAL SMOKING AND ALCOHOL CONSUMPTION ON BIRTH WEIGHT IN THE WHITE BRITISH POPULATION IN BRADFORD: PRELIMINARY FINDINGS FROM THE BORN IN BRADFORD STUDY

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¹E Petherick, ²R Parslow, ²P McKinney, ¹D Tufnell, ³D Leon, ¹Pauline Raynor, ⁴D Lawlor, ¹J Wright. ¹Bradford Institute for Health Research, Bradford Royal Infirmary, Bradford, UK; ²Paediatric Epidemiology Group, University of Leeds, Leeds, UK; ³London School of Hygiene & Tropical Medicine, London, UK; ⁴MRC Centre for Causal Analyses in Translational Epidemiology, Department of Social Medicine, University of Bristol, Bristol, UK

Background Exposure to cigarette smoke and heavy alcohol consumption has been known to influence birth weight and risk of being small for gestational age. Despite this knowledge, very little exploration of the timing of cigarette smoking and alcohol exposure on growth has been undertaken.

Aims To investigate the effect of dose and timing of pre-pregnancy and prenatal alcohol and cigarette exposure on birth weight.

Methods The Born in Bradford cohort includes women of diverse ethnicities, with 46% of the population being of South Asian origin. However, smoking prevalence (5.9%) and alcohol consumption rates (0.4%) in pregnant women of South Asian origin were too low for meaningful analyses. Therefore, analyses were restricted to the white British women who had completed a questionnaire and had a live singleton full-term birth at the Bradford Royal Infirmary, between October 2007 and August 2009. Data were available on smoking and alcohol consumption at three different time points: in the 3 months prior to pregnancy, first 3 months of pregnancy and when the baseline questionnaire was administered (26–28 weeks gestation) by trained interviewers. This information was used to classify women into three mutually exclusive categories separately for both smoking and alcohol: smoker/drinker at all time points, decreasing or quitting at different time periods throughout and nonsmokers/drinkers at all time points. Mean differences in birth weight between these categories were investigated using multivariable linear regression. The model adjusted for maternal age, baby's gender, parity, area deprivation, caffeine consumption, and mother's weight at her first antenatal clinic appointment.

Results 1933 white British mothers and their children were eligible for inclusion. 39.7% were regular smokers in the 3 months prior to pregnancy and 33.6% during pregnancy, whilst 72% consumed alcohol in the 3 months prior to pregnancy and 40% during