inductively. This study is registered as PROSPERO 2015: CRD42015026464.

Results 78 451 unique references were identified, of which 35 (13 studies) evaluated outcomes. Quality of evidence was highly variable, and often related to whether meta-analysis was possible. The strongest evidence for the effectiveness of interventions integrating academic and health education was found in the reduction of substance use in KS2 and KS3, and a meta-analysis for the effectiveness of these interventions in reducing violence victimisation in KS2 did not find an effect. We described intervention components in terms of a) the number of domains (school, classroom, family) targeted, b) the planned duration of the intervention, c) how integration was specified (using literature, teaching study skills, supporting teachers to integrate in their own classrooms).

Discussion There is under-theorisation and understanding of characteristics affecting implementation of integrated academic and health curricula as well as appreciation of how academic attainment and reduced risk-taking may be linked. However, available data suggest that multi-level interventions that aim to erode boundaries—or rather, strengthen pro-social relationships—between academic and health curricula, teachers and students, classrooms and schools and schools and families are likely to have the greatest impact on reducing risk-taking and improving academic outcomes. These programmes may be effective in reducing substance use but do not appear to reduce outcomes related to violence.

Diet and nutrition

OP38 DIETARY PATTERN ASSOCIATIONS WITH AGE AT NATURAL MENOPAUSE IN THE UK WOMEN'S COHORT STUDY

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Background British women spend around one third of their life post-menopausally. The timing of menopause has been linked to several chronic diseases. Evidence shows an association between a later menopause and reduced risk of cardiovascular diseases and osteoporosis, and a higher risk for endometrial, ovarian and breast cancer. It is hypothesized that diet can influence the timing of natural menopause. However, studies reporting this association are limited and contradictory. This study aimed to investigate the prospective association between dietary patterns derived from two different methods and age at natural menopause.

Methods Menopausal status was reported at two time points 4 years apart in the UK Women's Cohort Study. Natural menopause was defined as the permanent cessation of menstrual periods for at least 12 consecutive months. A 217-item food frequency questionnaire was used to measure diet of participants at baseline. Principal component analysis (PCA) and reduced ranked regression (RRR) were used to identify dietary patterns for 13 916 women. Cox proportional hazards regressions were used to estimate hazard ratios (HR) and 95% confidence intervals (CIs) for each pattern in relation to age at natural menopause, adjusting for potential confounders (smoking status, ethanol intake, education level, social class, physical activity level and age at baseline). All analyses were conducted using Stata 14.

Results Five patterns were identified from the PCA which accounted for 16% of variance in dietary intake. These were labelled: 'vegetables and legumes', 'animal proteins', 'fruits', 'fats and sweets' and 'low-fat products'. Three patterns were derived from RRR (29% of the total variance): 'sweets, pastries and puddings', 'low-fat dairy and meat', and 'red meat and processed meat'. Women who scored higher on the 'animal proteins' pattern were 6% less likely to have gone through a natural menopause (HR: 0.94, 95% CI 0.90 to 0.97) compared to those who scored lower. The 'red meat and processed meat' pattern predicted a 7% higher risk for a later natural menopause (HR: 0.93, 95% CI 0.87 to 1.00). No evidence of an association was observed between the other dietary patterns and incidence of being naturally menopausal.

Conclusion This is the first study demonstrating a link between dietary patterns and age at natural menopause. Both PCA and RRR are useful in deriving dietary patterns which can influence the onset of natural menopause. RRR provided a more useful insight for the association between dietary patterns and the timing of menopause in comparison to PCA. These findings will contribute to an improved understanding of the timing of natural menopause in relation to diet, which may also have implications associated with longer term health outcomes in post-menopausal women.

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OP39 THE ASSOCIATION BETWEEN AN UNHEALTHY CHILDHOOD DIET AND BODY COMPOSITION DEPENDS ON PRENATAL EXPERIENCE: DATA FROM THE SOUTHAMPTON WOMEN'S SURVEY

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Background The developmental mismatch hypothesis proposes that risk of diseases such as obesity is increased when impaired prenatal nutrition and growth, is followed by an unhealthy childhood diet. We used data from the Southampton Women's Survey (SWS) to investigate whether there was an interaction between conditional growth in fetal abdominal circumference (AC) in late pregnancy and diet at age 6 years on body composition at age 9 years.

Methods 3158 SWS women had live singleton births. AC was measured at 11, 19 and 34 weeks' gestation, birth, and ages 6 months and 1, 2, 3 and 6 years. At age 9 years a subset had dual-energy X-ray absorptiometry (DXA) scans. Among mothers with a reliable menstrual history, enabling precise gestation determination, 582 children had DXA measurements. Fat, lean and bone mass at age 9 years were transformed to z-scores.

AC z-scores for age were created and conditional AC growth between each pair of consecutive time points calculated. At age 6 years a 'prudent' dietary pattern was identified using principal component analysis, characterized by frequent consumption of fruit, vegetables and fish. Linear regression models were fitted to assess effects of AC growth on 9-year