Associations between maternal energy adjusted Dietary Inflammatory Index (E-DII) in pregnancy and maternal cardiometabolic factors

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BACKGROUND

- Excessive inflammation during pregnancy has been linked to adverse outcomes such as pre-eclampsia, foetal growth restriction and early pregnancy loss[1,2,3].
- The energy adjusted Dietary Inflammatory Index (E-DII) is a way of assessing the inflammatory potential of the habitual diet [4].
- As diet is a major determinant of inflammation, it could be possible that maternal dietary inflammatory potential may influence maternal cardiovascular health.
- Current research has focused on the effect of maternal DII in pregnancy on foetal outcomes but less is known about its association, if any, with maternal health outcomes.

METHODS

- This study is secondary analysis of data from the ROLO study, a randomised controlled trial (RCT) of a low glycemic index diet vs. routine antenatal care in pregnancy to reduce recurrence of macrosomia[5].
- Cardiometabolic factors were obtained including body mass index (BMI) at booking and blood pressure (BP), lipid profile, glucose and HOMA1-IR at pregnancy booking (early) and at 34 weeks (late).
- Energy adjusted DII (E-DII) was calculated using 3-day food diaries provided by mothers in their first, second and third trimesters.
- Statistical analysis included correlations, multiple linear regression, one-way repeated measures ANOVA and paired sample t-tests.

RESULTS

- N= 518, with mean maternal age at delivery 32.5 years old
- No relationship between E-DII in trimester 1 and early or late HOMA1-IR.
- Significant positive associations were observed between E-DII in trimester 1 and maternal BMI, early and late total cholesterol, early triglycerides, early and late LDL, late glucose, and early diastolic BP (Table 1).
- A positive association was seen between E-DII in trimester 3 and late diastolic blood pressure (Table 2).
- Significant increase in maternal total cholesterol, total LDL and HDL cholesterol and triglycerides from trimester 1 to trimester 3.

Table 1: Associations between E-DII trimester 1 and early and late maternal cardiometabolic factors.

	E-DII Trimester 1		
	B	95% CI	P-value
Maternal BMI (kg/m²)	0.470	0.199,0.754	0.001
Early cholesterol (mmol/l)*	0.168	0.061,0.249	0.001
Late cholesterol (mmol/l)*	0.150	0.012,0.243	0.029
Early Triglycerides (mmol/l)	0.040	0.005,0.080	0.036
Early LDL (mmol/l)*	0.133	0.046,0.206	0.001
Late LDL (mmol/l)*	0.123	0.010,0.209	0.001
Late Glucose (mmol/l)	0.034	0.003,0.069	0.045
Diastolic BP – booking (mmHg)	0.548	0.070,1.006	0.021

*Multiple linear regression; All models adjusted for maternal age at delivery, maternal smoking, RCT group, maternal education, maternal ethnicity,*LDL and total cholesterol adjusted for timepoint that blood was analysed at; 95% Confidence interval; Statistically significant p<0.05*

Table 2: Associations between E-DII in trimester 3 and late maternal cardiometabolic factors.

	E-DII Trimester 3		
	B	95% CI	P-value
Late Diastolic BP – 34 weeks (mm/Hg)	0.624	0.103,1.145	0.019

Multiple linear regression; All models adjusted for maternal age at delivery, maternal smoking, RCT group, maternal education, maternal ethnicity; 95% Confidence interval; Statistically significant p<0.05.

CONCLUSION

- A diet low in pro-inflammatory foods during pregnancy may have the potential to improve maternal cardiovascular health within pregnancy.
- Further research is needed to clarify the impact of an anti-inflammatory diet in pregnancy and how this advice could be practically incorporated into current healthy eating guidelines/recommendations for pregnant women.

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