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Maternal plasma fatty acid composition and pregnancy outcome in adolescents

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Pregnancy during adolescence carries a greater risk of preterm delivery and small-for-gestational age (SGA) birth compared with pregnancy during adulthood^(1,2) and this finding has been attributed in part to poorer maternal nutritional status⁽³⁾. Recent meta-analyses of randomized controlled trials in adults have suggested that supplementation with *n*-3 long-chain PUFA (LCP) extends the duration of gestation⁽⁴⁻⁶⁾ and observational data have also suggested a protective effect on fetal growth⁽⁷⁾.

The present study has addressed the hypothesis that low maternal LCP status adversely influences pregnancy outcome.

Adolescents (*n* 500; age 14–18 years) were recruited at ≤20 weeks of gestation. Frequency of consumption of oily fish was determined by questionnaire (at recruitment and during the third trimester). The fatty acid composition of plasma lipids during the third trimester was determined in 283 subjects. Principal components analysis (PCA) was used to derive components, which were divided into tertiles. Pregnancy outcomes were then compared by tertile, adjusting for potentially-confounding variables.

Of the participants 69% reported never eating oily fish during pregnancy, although consumption was not associated with a shorter duration of gestation, lower customized birth weight or higher incidence of SGA birth. PCA of the fatty acids composition of plasma lipids identified two components: 'low PUFA:SFA (P:S)' and 'high *n*-3 LCP'. There were no differences between tertiles of the 'high *n*-3 LCP' component and gestational age at delivery ($P=0.80$), customized birth weight ($P=0.38$), or incidence of SGA birth ($P=0.16$), nor were there any associations between the 'low P:S' component and pregnancy outcome.

Lower proportions of *n*-3 LCP in plasma lipids are not associated with greater risk of adverse pregnancy outcomes in adolescents.

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