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Associations between maternal serum concentrations of polyunsaturated fatty acids and C - reactive protein among a high-fish eating cohort in the Republic of the Seychelles

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C- reactive protein (CRP) is an acute-phase protein secreted by the liver in response to inflammation[1]. Circulating concentrations of n-3 polyunsaturated fatty acids (PUFA), particularly eicosapentaenoic acid (EPA) are known to exert anti-inflammatory effects. Studies have previously shown higher dietary intakes of n-3 PUFA and oily fish to be inversely associated with serum CRP concentrations, albeit in low fish-eating populations[2]. Fewer studies have investigated these relationships in high fish-eating populations or in pregnant women. The aim of this study was to investigate associations of maternal serum concentrations of PUFA and reported fish consumption with serum concentrations of CRP within a high-fish eating cohort of pregnant women in the Republic of Seychelles.

Serum samples were previously collected from pregnant women at 28 weeks gestation ($n = 1160$) as part of the Seychelles Child Development Study Nutrition Cohort 2 (SCDS NC2). These samples were analysed using the iLab 650 Chemistry Analyser to quantify serum CRP concentrations (μg/dl), using a CRP diagnostic kit. Data were available for the reported number of fish meals per week from Fish Use Questionnaires (FUQ) administered during pregnancy. Multiple linear regression analyses were performed to investigate associations of PUFA status and reported fish consumption with serum CRP concentrations, whilst adjusting for maternal BMI and maternal age at enrolment.

Serum PUFA (mg/ml)	Serum CRP	
	β	P-value
ALA	−0·038	0·180
EPA	**−0·106**	**<0·001**
DHA	−0·045	0·111
Total n-3 PUFA	−0·054	0·057
Total n-6PUFA	0·021	0·453

Model was adjusted for maternal BMI and maternal age at enrolment. ALA: *Alpha-linolenic acid; EPA:Eicosapentaenoic* acid; DHA: *Docosahexaenoic* acid; n-3 PUFA: sum of ALA+EPA+DHA

The mean (SD) number of fish meals consumed per week by women during pregnancy was 8·52 (4·51). Results show that the n-3 PUFA, EPA is a significant negative predictor of CRP concentrations. There were no significant associations between CRP and concentrations of DHA, total n-3 PUFA, totaln-6 PUFA or with reported fish consumption in these models. In conclusion, these results agree with previous studies [3] and confirm our hypothesis that increasing serum concentrations of EPA are exerting anti-inflammatory effects, as shown by lower serum CRP concentrations, within this high-fish eating cohort of pregnant women.

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