

Early nutritional determinants of cognitive development in children of the EDEN mother-child cohort - Role of polyunsaturated fatty acids

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Optimal polyunsaturated fatty acids (PUFA) intake during late pregnancy and the first months of life could support the brain development and its cognitive function. We aimed to investigate the relationships between pre- and early postnatal exposures to PUFA, and neurodevelopment of 2 and 3 years old children.

We analyzed data of the EDEN mother-child cohort which enrolled 2002 pregnant women during pregnancy and followed-up their child until 8 years. Maternal food intake during pregnancy was evaluated by food frequency questionnaire, and duration of breastfeeding was assessed by 4 postnatal questionnaires. Lipids in colostrum of breastfeeding mothers were analyzed by gas chromatography. Several aspects of the cognitive and motor development were assessed at 2 and 3y.

At both ages, scores of neurodevelopment were higher for breastfed children than for never breastfed children. Among breastfed children, breastfeeding duration was positively associated with neurodevelopment. Maternal dietary n-6/n-3 ratio during late pregnancy was negatively associated with measures of neurodevelopment, and this association was reinforced among never breastfed children. The differences of neurodevelopment of breastfed children did not seem to be explained by colostrum PUFA content. However, linoleic acid was negatively associated with some measures of neurodevelopment.

Combined with the literature, these results underline the importance of PUFA exposures during pre- and early postnatal periods for the child neurodevelopment. From a public health perspective, this work reiterates the need to promote breastfeeding duration and to monitor the balance of PUFA intake during pregnancy and lactation periods.