Breastfeeding, Long-Chain Polyunsaturated Fatty Acids in Colostrum, and Infant Mental Development

WHAT'S KNOWN ON THIS SUBJECT: Several studies have reported positive associations between breastfeeding and children's cognition. Parental factors are thought to explain a large part of this association. However, the potential role of long-chain polyunsaturated fatty acid (LC-PUFA) content in breast milk remains uncertain.

WHAT THIS STUDY ADDS: This study is the first to assess the association between LC-PUFA levels in colostrum and children's mental development in a large population-based study. LC-PUFA levels seem to play a beneficial role, particularly in children who are breastfed for longer durations.

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KEY WORDS
child development, cognition, breastfeeding, fatty acids, unsaturated, intelligence

ABBREVIATIONS
LC-PUFA—long-chain polyunsaturated fatty acid
IQ—intelligence quotient
ALA—α-linolenic acid
EPA—ecosapentaenoic acid
DPA—docosapentaenoic acid
DHA—docosahexaenoic acid
LA—linoleic acid
GLA—γ-linolenic acid
DGLA—dihomo-γ-linolenic acid
AA—arachidonic acid
ADA—adrenic acid
OA—osbond acid
CI—confidence interval

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abstract

BACKGROUND: Breastfeeding has been associated with improved neurodevelopment in children. However, it remains unknown to what extent nutritional advantages of breast milk may explain this relationship.

OBJECTIVE: We assessed the role of parental psychosocial factors and colostrum long-chain polyunsaturated fatty acid (LC-PUFA) levels in the relationship between breastfeeding and children's neurodevelopment.

METHODS: A population-based birth cohort was established in the city of Sabadell (Catalonia, Spain) as part of the INMA-INfancia y Medio Ambiente Project. A total of 657 women were recruited during the first trimester of pregnancy. Information about parental characteristics and breastfeeding was obtained by using a questionnaire, and trained psychologists assessed mental and psychomotor development by using the Bayley Scales of Infant Development in 504 children at 14 months of age.

RESULTS: A high percentage of breastfeeds among all milk feeds accumulated during the first 14 months was positively related with child mental development (0.37 points per month of full breastfeeding [95% confidence interval: 0.06–0.67]). Maternal education, social class, and intelligence quotient only partly explained this association. Children with a longer duration of breastfeeding also exposed to higher ratios between *n*-3 and *n*-6 PUFAs in colostrum had significantly higher mental scores than children with low breastfeeding duration exposed to low levels.

CONCLUSIONS: Greater levels of accumulated breastfeeding during the first year of life were related to higher mental development at 14 months, largely independently from a wide range of parental psychosocial factors. LC-PUFA levels seem to play a beneficial role in children's mental development when breastfeeding levels are high. *Pediatrics* 2011;128:e880–e889