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ORIGINAL ARTICLE

Breast milk supplementation and preterm infant development after hospital discharge: a randomized clinical trial☆,☆☆

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KEYWORDS
Breastfeeding;
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Abstract
Objectives: To assess the effect of maternal breast milk supplementation on the development of exclusively breast-fed very low birth weight preterm infants at 12 months of corrected age.
Methods: A randomized clinical trial with 53 infants followed-up after discharge from the neonatal unit until a corrected gestational age of 12 months. Newborns in the intervention group were breastfed exclusively with maternal milk and received 2 g of a multinutrient supplement (Pré-Nan®, Nestlé, Vevey, Switzerland) added to expressed breast milk twice a day until a corrected age of 4–6 months. The control group was exclusively breastfed without supplementation. After monthly follow-up, developmental assessment was performed using the Bayley III Scale.
Results: There was no statistically significant difference on the Bayley III Scale between the intervention and control groups in any of the assessed domains: motor, cognitive, and communication. However, scores in the three domains were always higher in the group that received the supplement. There were a similar number of cases of developmental delay in both groups: seven (28%) in the group that received the supplement and nine (33.3%) in the group that was exclusively breastfed.

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☆☆ Study conducted at Universidade Federal do Maranhão (UFMA), São Luís, MA, Brazil.
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Conclusions: The results failed to show an association between post-discharge multinutrient supplementation and development in the assessed infants.

PALAVRAS-CHAVE
Amamentação;
Prematuro;
Alta hospitalar;
Desenvolvimento;
Leite Materno

Suplementação do leite materno e desenvolvimento de lactentes pré-termo após alta hospitalar: ensaio clínico randomizado

Resumo
Objetivos: Avaliar o efeito da suplementação do aleitamento materno exclusivo com aditivo multicomponente no desenvolvimento de lactentes nascidos pré-termo de muito baixo peso aos 12 meses de idade gestacional corrigida.
Método: Ensaio Clínico Randomizado com 53 lactentes, acompanhados da alta hospitalar na Unidade Neonatal até o 12° mês de idade gestacional corrigida. Aqueles alocados no grupo intervenção permaneciam em aleitamento materno exclusivo e recebiam 02 gramas de suplemento multicomponente em pó (Pré-Nan®, Nestlé, Vevey, Suíça), adicionados ao leite ordenhado duas vezes ao dia, por um período de 4 a 6 meses de idade gestacional corrigida. O grupo controle permanecia em aleitamento materno exclusivo sem suplementação. Após acompanhamento mensal, foi feita avaliação do desenvolvimento por meio da Escala de Bayley III.
Resultados: Na comparação do desenvolvimento pela Escala de Bayley III entre os grupos intervenção e controle, não houve diferença estatística significante em nenhum dos domínios estudados: motor, cognitivo e linguagem. Porém, os valores dos escores foram sempre maiores no grupo intervenção que no grupo controle nos três domínios. O atraso de desenvolvimento se distribuiu de forma similar nos grupos: sete casos (28%) no grupo intervenção e nove (33,3%) no grupo controle.
Conclusões: Os resultados não mostraram associação entre suplementação multicomponente pós-alta e o desenvolvimento dos lactentes analisados pela Escala de Bayley III.

Introduction

The developing brain is particularly vulnerable to nutritional deficiencies due to several fast neurological process pathways, such as synapse formation and myelination. It is regulated by nutrients such as protein, energy, fat, minerals and growth factors.[1–3]

A deficiency of these elements can have later consequences, progressing to cerebral dysfunction associated with future alterations in child development.[2] Therefore, adequate nutrition, especially in preterm newborns is of great importance to prevent, among other problems, neurodevelopmental delays.[4–6]

Breast milk is considered the ideal food in the neonatal period, promoting gastrointestinal maturation, generating immunological benefits, and leading to increased levels of docosahexaenoic acid, an important component for cerebral development.[5,7–9] Nonetheless, its exclusive use in certain situations can lead to nutrient deficiencies and bone demineralization.[10,11]

The hospitalization period of preterm newborns, especially those with very low birth weight, is one of the situations where breast milk supplementation is a well-established and current practice during the in-hospital period, promoting better weight gain, increased length and head circumference in the short term, and better development indexes in the medium and long terms.[12–14]

Even though the benefits of human milk supplementation for hospitalized preterm infants are well documented in the literature, there is no consensus on the effectiveness of this practice after hospital discharge.[6,10,15] Recently, the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN Committee on Nutrition) recommended that exclusively breast-feed infants who are underweight for their post-conceptual age when discharged from the hospital should receive supplementation to meet their nutritional needs.[16]

In recent years, some authors have attempted to clarify this issue by assessing the effectiveness of post-discharge supplementation in studies with experimental design. In a systematic review, Young et al.[17] selected only the randomized trials by O'Connor et al.[18] and by Zachariassen et al.[19] These authors observed good results of supplementation in some specific situations, such as higher length during the study period and higher head circumference in preterm infants with birth weight <1250 g. In spite of that, the review authors concluded that there is no consensus on the best way of feeding preterm infants post-discharge in order to provide better growth results.

Regarding the effects of breast milk supplementation on the post-discharge development, Aimone et al.,[20] studying the same population as O'Connor et al.,[19] observed a trend to better weight gain and higher head circumferences in children from the supplemented group in comparison with