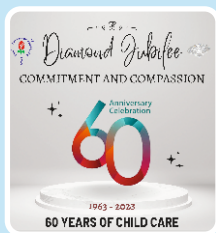


Indian Academy of Pediatrics (IAP)



nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth

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UNDER THE AUSPICES OF THE IAP ACTION PLAN 2023

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Dear fellow IAPans,

nRICH

Newer Research and recommendations In Child Health-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialties of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology, vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

Upendra Kinjawadekar
National President 2023
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BASED ON ARTICLE

Hindmilk as a Rescue Therapy in Very Preterm Infants with Suboptimal Growth Velocity. Alshaikh BN, Festival J, Reyes Lored A, Yusuf K, Towage Z, Fenton TR, Wood C. *Nutrients*. 2023 Feb 13;15(4):929.

ABSTRACT

Background: Despite advances in neonatal nutrition, very preterm infants remain at increased risk of extrauterine growth faltering.

Methodology: This prospective before and after study aimed to examine the effect of hindmilk, the milk at the end of a breast expression session, on growth and plasma fatty acids (FAs) of infants born <30 weeks' gestation who had been on full enteral feeds for > 2 weeks and had a weight gain of <15 g/kg/day despite optimizing energy and protein intakes. Weight and plasma FAs were assessed before and two weeks after feeding hindmilk. Growth anthropometrics were assessed weekly for four weeks. Paired t-tests and multiple linear regression were used for statistical analyses of data from 34 infants and their 29 mothers.

Results: In infants with suboptimal weight gain, feeding hind milk resulted in significant increase in weight gain by an average of 3.9g/kg/day in the two weeks after feeding hindmilk (95%CI 1.2–6.5 g/kg/day). Weight Z-scores improved by an average of 0.61 (95%CI 0.02–1.20) and head circumference Z-score by an average of 0.83 (95%CI 0.20–1.47) at two weeks and at three weeks respectively. Feeding hindmilk resulted in higher fat intakes by 1.3g/dl (0.7, 2.0) and higher calorie intakes by 11.9 (5.5, 18.3) kcal/dl. Plasma linoleic acid (LA) and α -linolenic acid (ALA) increased after feeding hindmilk.

Conclusion: Hindmilk may improve weight, linear and head growth and increase LA and ALA in very preterm infants with suboptimal growth. A large randomized controlled trial is required to examine and validate the potential benefits of hindmilk.

SUMMARY

Extra uterine growth restriction (EUGR) is a universal problem of sick and very preterm babies in NICU despite nutritional interventions like total parenteral nutrition, enteral feeding using mothers own milk (MOM) or pasteurized donor milk, preterm formula and use of composite or targeted human milk fortifier (HMF).

This prospective before and after study was conducted in a level 3 NICU in Canada. It examined the effect of hind milk (collected after 3 minutes of establishing flow by double pumping system) on growth of infants (<30 weeks, < 1500 gm, 97% on respiratory support, using Fentons chart) receiving full enteral feeds (> 140 ml/kg/day for 3 days without parenteral nutrition) for > 2 weeks and showed weight gain of <15 g/kg/day despite optimizing energy and protein intakes (Weight based enteral feeding table, daily feeding goals, lactation support, HMF at 80 ml/kg/day, protein rich fortifier and/or formula in select infants, probiotics, standard multivitamin and iron supplement). The study excluded small for gestational age infants and those with chromosomal anomaly.

The researchers observed hind milk supplementation led to a larger weight gain and higher weight and head circumference Z-scores after four weeks but no effect on the linear growth. The hind milk provided additional higher fat by 1.3g/dl (0.7, 2.0) and higher calorie by 11.9 (5.5, 18.3) kcal/dl compared with composite milk. There was increase in linolenic acid and alpha linoleic acid (precursors of LCPUFAs), by 1.1 and 1.3-fold, respectively. There was no significant differences in protein, carbohydrates and milk fatty acid distribution between the composite and hind milk.

Breast milk is highly variable between mothers, during feeds and is influenced by postnatal age and gestational stage. Very preterm infants fed with MOM are at risk of significant growth failure due to inadequacy of calories, proteins, minerals and essential fatty acids. Hind milk is fat rich and calorie dense which makes it an attractive nutritional option for supplementation. Further its low osmolarity, increased energy density without increasing volume makes it valuable for use in very preterm. Being rich in essential fatty acids it offers an advantage to premature infants.

The strengths of the study include pumping of high volume of milk by mothers, use of exclusive mothers own milk for enteral feed, standardized nutrition policy and analysis of plasma fatty acid distribution post hind milk supplementation. The limitations were lack of control group, small sample size, infrequent milk analysis, transient effect of supplementation, no body composition analysis, drop outs due to step down care and lack of long term follow up.

There remains a potential risk of over supplementation of fat soluble vitamins with this strategy. There is need for larger studies and long term follow up of hind milk supplemented babies for its effect on growth and development.

IMPLICATIONS FOR PRACTICE

1. Birth of a preterm baby is a nutritional emergency. Strategies to optimize nutrition should be standardized for the unit, individualized for the baby and daily goals posted on bed sides of preterm and sick neonates.
2. The existing nutritional approaches for preterm infants frequently fall short of fulfilling their dietary requirements, which can have unfavorable impacts on their growth and development.
3. The utilization of hindmilk offers a hopeful solution to address this nutritional dilemma.