

Breast milk versus formula milk and neuropsychological development and sleep

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Editorial

Neuro-protective effect of breastfeeding is reflected on major areas of infantile development, namely gross motor development, fine motor development, myelination patterns, etc. This is highly attributable to special components of breast milk or may be to a unique feature in breastfeeding.

A cohort study including 14000 newborns, about half of them were exclusively breast fed for the first four months of their lives, this percentage dropped down to about 4% by the end of the fourth month of age. One third of these babies were not breast fed at all; 9% of them were identified with a degree of gross motor delay, 6% with fine motor delay by the age of 9months. The proportion of infants who acquired their milestones overtime increased with exclusivity of breastfeeding. Infants who had never been breastfed were 40-50% more prone to have some sort of motor delay than breast fed infants (10.7% vs 7.3%). These findings did not decrease with adjustment of other confounders, e.g. biological, socioeconomic or psychosocial factors.¹

Neuro-physiological outcomes in breast fed infants was evaluated through flash Visual Evoked Potential (VEP), Brainstem Auditory Evoked Potential (BAEP) and Somato-Sensory Evoked Potential (SSEP) and showed significant prolongation of P-100 wave latencies in formula fed infants, in addition to that, prolongation of absolute waves I, III, V wave latencies of BAEP was also seen in formula fed infants in comparison with breast fed infants. SSEP showed similar findings to VEP and BAEP. This concludes that maturation and brain myelination patterns in breast fed infants is more mature than formula fed infants.²

Small for Gestational Age (SGA) born babies are at high risk for neuro-developmental delay. Studies have shown that enriched formula fed to term SGA infants improve their growth and their neuro-developmental outcome. A multicenter randomized controlled study in United Kingdom showed that there was no significant intergroup difference in Bayley Mental Development Index (MDI) or Psychomotor Development Index (PDI) scores at 18 months. Though, breast fed infants have significantly higher MDI and PDI scores than formula fed infants. Confounding factors accounted for one third of the resulted association with MDI score and none of the association with PDI score. It is previously reported that enriched formula do have significant effect on enhancing linear growth, though this was not correlated with neurodevelopmental benefit.³

Breast feeding should be encouraged for best neuro-developmental outcome in infants born SGA. Behavioral assessment of neonates was done for 83 neonates at their ninth day of life, though special assessment scale "Brazelton Neonatal Behavioral Assessment Scale". 42 neonates were exclusively breast fed and 42 were formula fed, the study showed that breast fed infants exhibited fewer abnormal reflexes, signs of depression, and withdrawal. This proves that breast

feeding is much advantageous for neuro-behavioral development and organization of infants.⁴

Minimal duration of breast feeding, or exclusive breast feeding duration that will be needed to provide optimal neuro-behavioral and neuro-psychological outcomes for the newborns was previously investigated through assessing the quality of motor development of neonates. A directly proportional relationship was confirmed between breastfeeding duration and quality of movement especially for the first 6 weeks of life. Infants who were exclusively breastfed for the first 6 weeks of life were found to have optimal gross motor milestones in 47%, compared to 18% in the group of neonates who were breast fed for less than 6 weeks.^{5,6}

Follow up randomized studies in Honduras for breast fed infants for 4months and older showed that exclusive breast feeding for 6 months was linked to better developmental milestones acquirement than introducing solid food. In addition to breast feeding from the fourth month, they crawled sooner and was more likely to walk by a maximum of 12 months, than other infants who were exposed to solid food since the age of 4months even in addition to breast feeding.⁷

Exclusive breast feeding should always be encouraged and variable benefits to neonates and infants to be delivered to their caregivers, motor development, myelination pattern are just examples to breast milk benefits which extend to include better sleeping pattern, psychosocial development as well as other critical areas of early infant development.

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Conflicts of interest

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