THE EFFECT OF EXCLUSIVE BREASTFEEDING AND FORMULA FEEDING ON BODY COMPOSITION DURING THE FIRST TWO YEARS OF LIFE

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CONCLUSIONS

- **Gain in $FM\%_{1\text{-}3mo}$ correlates with FM% at 24 months, supporting a critical window for adiposity programming in early life**
- **FM% at 1, 3 and 24 months did not differ between BF and FF infants**

Background

Excessive gain in FM during the first three months of life is associated with an increased risk for adiposity and cardiovascular diseases in later life. This three-month period is also known as the critical window for adiposity programming. Early gain in fat mass (FM) might be influenced by type of feeding.

Objective

To investigate the correlation of fat mass development in the first three months with fat mass at 24 months.
To investigate differences in body composition between exclusively breastfed (BF) and formula fed (FF) infants from birth to 24 months.

Methods

In 93 exclusively BF (48 boys) and 58 exclusively FF (39 boys) term born infants from the Sophia Pluto Study Cohort, we measured:

- FM% by PEA POD (COSMED, Italy) at 1 and 3 months.
- FM% by DXA (Lunar Prodigy, GE Healthcare, UK) at 24 months, with vacuum cushion to prevent movement.
- Abdominal FM by ultrasound at 3 and 24 months.

DXA scans were analyzed using enCORE software version 14.10.

PEA POD

Results

In the total group, gain in $FM\%_{1\text{-}3mo}$ correlated with:
- FM% (R=0.178, p=0.007) at 24 months
- Subcutaneous FM (R=0.212, p=0.001) at 24 months
- Not with visceral FM (R=-0.020, p=0.768) at 24 months

Median (IQR) FM% at 1, 3 and 24 months did not differ between BF and FF infants, also after correction for gender (p=0.841, p=0.392 and p=0.129, resp.).

Gain in $weight\text{-}for\text{-}age_{1\text{-}24mo}$ was significantly lower in BF infants compared to FF infants (p=0.010), but there was no significant difference in gain in $FM\%_{1\text{-}24mo}$ between both groups (p=0.232).

Table 1. Characteristics; median [IQR]

	Breastfeeding (n=93)	Formula feeding (n=58)	P-value
Fat mass percentage (%)			
1 mo	17.1 [14.7 – 20.6]	16.6 [13.6 – 19.5]	0.188
3 mo	23.2 [21.2 – 26.2]	22.9 [19.0 – 26.3]	0.165
24 mo	16.2 [14.3 – 19.8]	16.4 [14.5 – 19.1]	0.872
$\Delta_{1\text{-}24mo}$	-0.98 [-3.20 – 1.58]	0.38 [-3.22 – 3.72]	0.232
Weight-for-age (SDS)			
1 mo	0.79 [-0.20 – 1.41]	-0.13 [-0.66 – 0.86]	
3 mo	0.53 [-0.10 – 1.33]	0.34 [-0.32 – 1.06]	
24 mo	-0.20 [-0.99 – 0.47]	-0.31 [-1.32 – 0.54]	
$\Delta_{1\text{-}24mo}$	-0.94 [-1.61 – -0.27]	-0.66 [-1.22 – 0.45]	**0.010**
Height-for-age (SDS)			
1 mo	0.42 [-0.18 – 0.80]	-0.19 [-0.73 – 0.85]	
3 mo	0.46 [0.05 – 1.00]	0.36 [-0.30 – 0.99]	
24 mo	0.33 [-0.34 – 0.85]	0.36 [-0.31 – 1.10]	
$\Delta_{1\text{-}24mo}$	-0.10 [-0.61 – 0.45]	0.36 [-0.31 – 1.06]	**0.002**
Weight-for-height (SDS)			
1 mo	0.14 [-0.81 – 0.67]	-0.01 [-0.60 – 0.45]	
3 mo	0.20 [-0.44 – 0.76]	0.11 [-0.29 – 0.74]	
24 mo	-0.33 [-0.34 – 0.85]	-0.80 [-1.47 – 0.32]	
$\Delta_{1\text{-}24mo}$	-0.35 [-1.21 – 0.26]	-0.50 [-1.50 – 0.27]	0.755

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