

TYPE OF FEEDING IN RELATION TO FAT MASS AND FAT FREE MASS INDICES IN INFANCY

K.S. de Fluiter¹, I.A.L.P. van Beijsterveldt¹, D. Acton², A.C.S. Hokken-Koelega¹

¹ Erasmus University Medical Center, department of Pediatrics, subdivision of Endocrinology, Rotterdam, The Netherlands

² Danone Nutricia Research, Utrecht, The Netherlands

CONCLUSIONS

Gain in FMI_{1-3mo} correlates with body composition at 24 months, irrespective of infant feeding type, supporting a critical window for adiposity programming in infancy

Background

Infant body composition influences the development of obesity in childhood, with an identified critical window for adiposity programming during the first three months. Feeding type in infants can be an important factor. Fat mass index [FMI] and fat free mass index [FFMI] data allow comparisons in body composition between infants with different lengths.

Objective

To investigate the correlation of FMI and FFMI development during the first three months with body composition at 24 months.
To investigate the effect of exclusive breastfeeding [BF] or formula feeding [FF].

Methods

The Sophia Pluto Study Cohort is a birth cohort study investigating prenatal and postnatal growth trajectories in association with body composition during infancy and childhood, and its modification by nutritional intake.

In 101 exclusively BF (55 boys) and 53 exclusively FF (34 boys) term born infants, we measured:

- FM% by PEA POD (COSMED, Italy) at 1 and 3 months (Picture 1).
- FM% by DXA (Lunar Prodigy, GE Healthcare, UK) at 24 months (with vacuum cushion to prevent movement artifacts). DXA scans were analyzed using enCORE software version 14.10.
- Abdominal FM by ultrasound at 3 and 24 months.
- FMI [fat mass/length²] and FFMI [fat free mass/length²] were calculated

Results

The gain in FMI_{1-3mo} correlated with:

- FMI (R=0.265, p<0.001) at 24 months
- Subcutaneous FM (R=0.232, p<0.001) at 24 months
- Not with visceral FM (R=-0.045, p=0.499) at 24 months

The gain in FFMI_{1-3mo} correlated with:

- FFMI (R=0.550, p<0.001) at 24 months

Change in FMI_{1-24mo} and FFMI_{1-24mo} did not differ between BF and FF infants, (p=0.353 and p=0.960, respectively).

Table 1. Characteristics; median [IQR]

	Breastfeeding (n=101)		Formula feeding (n=53)		Total group (n=154)
	Male	Female	Male	Female	
Fat mass index (kg/m²)					
1 mo	2.5 [2.0 – 3.0]	2.4 [1.9 – 3.3]	2.3 [1.8 – 2.8]	2.2 [1.4 – 2.7]	2.4 [2.0 – 2.9]
3 mo	3.8 [3.3 – 4.3]	3.6 [3.0 – 4.4]	3.4 [2.7 – 4.2]	3.8 [3.1 – 4.3]	3.7 [3.1 – 4.3]
24 mo	2.7 [2.3 – 3.2]	2.6 [2.2 – 3.3]	2.6 [2.2 – 3.0]	2.4 [2.2 – 3.0]	2.6 [2.2 – 3.2]
Fat-free mass index (kg/m²)					
1 mo	12.3 [11.5 – 12.6]	11.5 [10.9 – 12.4]	12.0 [11.5 – 12.4]	11.5 [10.9 – 11.9]	11.9 [11.2 – 12.4]
3 mo	12.3 [11.7 – 12.8]	12.1 [11.3 – 12.6]	12.7 [12.0 – 13.2]	11.6 [11.1 – 12.5]	12.2 [11.6 – 12.8]
24 mo	13.4 [12.7 – 14.1]	12.9 [12.5 – 13.4]	13.2 [12.3 – 13.9]	12.7 [12.0 – 13.7]	13.1 [12.5 – 13.8]



Picture 1: PEA POD



Email: k.defluiter@erasmusmc.nl

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