

TRACKING BODY MASS INDEX AND FAT MASS PERCENTAGE FROM INFANCY INTO CHILDHOOD

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CONCLUSIONS

BMI and Fat Mass percentage (FM%) tracks from infancy into childhood, indicating that body composition is determined in the first months of life, regardless of feeding mode.

Background & Objective

It has been postulated that the first 3 months of life are critical for programming of adult metabolic health. We investigated if BMI and FM% in early life tracks to 5 years of age and if feeding mode influences tracking.

Methods

In 268 term born, healthy infants from the Sophia Pluto cohort (161 boys), BMI was calculated at 3 and 6 months, 2 and 5 years of age. FM% was measured at 3 and 6 months by PEA POD and at 2 and 5 years by DXA. BMI and FM% were divided in quartiles. Odds ratio (OR) of remaining in the same quartile over time was determined with logistic regression models.



Fig 1. PEAPOD (COSMED, Italy)



Fig 2. DXA (Lunar Prodigy, GE)

Results

BMI

Median BMI increased from 15.94 kg/m² at 3 months to 16.62 kg/m² at 6 months and decreased to 15.64 kg/m² and 15.32 kg/m² at 2 and 5 years, resp.

From 3 months to 2 years, BMI tracked in all quartiles.

2 years				
3 months	Q1	Q2	Q3	Q4
Q1	4.325 (<0.001)			
Q2		1.680 (0.046)		
Q3			2.554 (<0.001)	
Q4				7.065 (<0.001)

Table 1. Odds ratio (p-value) tracking of BMI from 3 months to 2 years of age

From 3 months to 5 years BMI tracked in in 3 quartiles.

5 years				
3 months	Q1	Q2	Q3	Q4
Q1	6.562 (0.011)			
Q2		1.050 (0.950)		
Q3			6.400 (0.013)	
Q4				7.233 (0.007)

Table 2. Odds ratio (p-value) tracking of BMI from 3 months to 5 years of age

BMI at 3 months was not a proxy for FM% at 5 years of age in our group.

Body composition

Median FM% increased from 22.9% to 24.1% between 3 and 6 months and decreased to 16.7% and 13.7% at 2 and 5 years, resp.

From 3 months to 2 and 5 years FM% tracked in the highest quartile.

From 6 months to 2 years FM% tracked in 3 quartiles.

2 years				
6 months	Q1	Q2	Q3	Q4
Q1	3.034 (<0.001)			
Q2		1.363 (0.374)		
Q3			2.017 (0.025)	
Q4				3.720 (<0.001)

Table 3 Odds ratio (p-value) tracking of FM% from 6 months to 2 years of age

From 6 months to 5 years FM% tracked in 3 quartiles.

5 years				
6 months	Q1	Q2	Q3	Q4
Q1	8.000 (0.012)			
Q2		21.750 (0.007)		
Q3			1.440 (0.648)	
Q4				4.333 (0.046)

Table 4. Odds ratio (p-value) tracking of FM% from 6 months to 5 years of age

Tracking of BMI and FM% was not different between breast feeding and formula feeding.

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