An unbalanced diet for excess calories and nutrients during the first years of life could have long-term consequences, promoting the development of obesity, hypertension, etc.

Rolland-Cachera et Al. F. Influence of macronutrients on adiposity development: a follow up study of nutrition and growth from 10 months to 8 years of age. *Int J Obes Relat Metab Disord* 1995;19:573-8;.


Etc.

The aims of complementary feeding recommendations must not only consider short term growth and how to correct nutritional deficiencies, but also promote an optimal health status in childhood and adulthood.
Mechanisms that can influence obesity development during CF time.

Programming

The results of a stimulus that, if presents during a specific window of growth, leaves a persistent anatomic or metabolic changes.


Insufficient iron intake during the first years of life

Tracking

Continuation of a dietary pattern established in infancy, so the ultimate effect on disease risk is due to an additive effects from repeated exposure.

Adair L. How could complementary feeding patterns affect the susceptibility to NCD later in life? NMCD (2012) 22, 765e769

A high salt diet or a high sugared soft beverages during the CF period
Is early introduction of solid foods promoting overweight?

Systematic reviews:
No clear association between the timing of the introduction of complementary foods and childhood overweight or obesity but there is some evidence that very early introduction (at or before 4 months), rather than at 4-6 months or >6 months, may increase the risk of childhood overweight.


especially true when infants are formula-fed

How early introduction of solid foods promote overweight?

- Increase daily total energy
- More rapid weight gain
- Excess of some nutrients intake (protein and simple sugar) and insufficient of others (fat)
- Cluster of socio-economic factors (low SES, young mothers, etc)
Is there a correlation between protein intake in infancy and obesity in later age?

**Positive correlation**


Etc.etc.

**No correlation**

Biochemical pathway related to the relation between protein intake and the subsequent increase of BMI

High protein intake → Alterations in IGF-1 and insulin secretion → Faster growth, especially fat gain → Obesity risk


From Adair, modified
How can reduced fat intake during the first 2 years of life promote obesity development?

Low-fat diets are reported in young children from developing and industrialized countries, and obesity is present in the two contexts. These observations suggest a specific role of fat restriction in programming later risks. Low-fat intakes in early life may promote adaptive metabolism to prevent underweight, but such anticipatory strategy may increase the susceptibility to develop obesity in individuals exposed to high-fat diets later in life.

BMI-Z-score at 7 years associated to added sugar intake between 1 and 2 years of age

Herbst et Al. Direction of associations between added sugar intake in early childhood and body mass index at age 7 years may depend on intake levels. J Nutr. 2011; 141(7):1348–1354.

Prevalence of obesity at 6 years in children who consumed Sugar-sweetened beverages (SSBs) during infancy twice as high as that among children who did not consumed SSBs (17% vs 8.6%)

How can sugar intake during the first 2 years of life promote obesity development?

High SSBs intake is not compensated for by a lower energy intake from other sources such as foods.

Baby beverages have are often sweetened with fructose which has a lower satiating power as compared to glucose.
Fructose sweetened beverages decrease leptin levels and increase ghrelin levels.