



# nutrishield

Fact-based personalised nutrition of young individuals

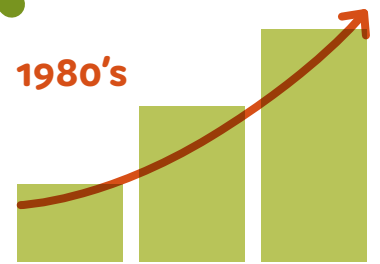


## Obesity and Diabetes in children

Obesity and diabetes in children are two pathological conditions with a strong socio-economic impact in Europe and worldwide.

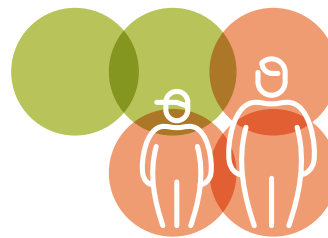
Obesity is one of the greatest public health challenges of the 21st century.

Its prevalence has **tripled** in many countries of the WHO European Region **since the 1980s**, and the numbers of those affected continue to rise at an alarming rate, particularly among children.



### Prevalence of diabetes

is also increasing among all ages in the European Region and, particularly, among children. For **2035**, a further increase of nearly **10 million** people with diabetes is projected for the EUR.



Strikingly, **over 60% of children** who are overweight before puberty **will be overweight in early adulthood**.



**430 000** children worldwide and **110 000** children in Europe are Diabetic



### Obesity

is already responsible for 2–8% of health costs and 10–13% of deaths in different parts of the Region.

**10-13% deaths**  
**2-8% health costs**



**95% type 1**

**95% of diabetic children** are affected by **type 1 diabetes** an autoimmune condition due to dysregulation of the immune system. The **rest of diabetic children are diagnosed with type 2** a condition that is mostly due to increases in overweight and obesity, unhealthy diet and physical inactivity.



According to the EURODIAB study a **3.4% annual increase** in **type 1 diabetes** from **1989 to 2013** among **children <14 years** of age was reported. This increase in disease incidence cannot be ascribed to genetic factors but it is certainly related to environmental changes. Recent evidence indicates that changes in dietary habits of children should be held responsible for the dramatic peak in diabetes incidence that occurred in the past decades.



## Diet and microbiota

Both type 1 and type 2 diabetes in children are associated with intestinal inflammation and alterations of the intestinal gut microbiota. In particular, consumption of a western diet characterized by high-sugar, high-saturated fat and low-fibers is responsible for intestinal inflammation and dysbiosis. On the other hand, some components of the diet modulate the intestinal microbiota, making it protective against metabolic and autoimmune diseases such as obesity and diabetes.



The Nutrishield project aims at **identifying dietary components and other lifestyle features** (e.g., stress, physical activity) **that alter microbiota composition in diabetic and obese children**. Data related to diet, stress, physical activity will be integrated with metabolomic and metagenomic profiles of microbiota in a bioinformatic platform with the ultimate goal to generate a personalized microbiota-targeted diet for diabetic and obese children.



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