



THE EARLY NUTRITION PROGRAMMING PROJECT

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Acronym: EARNEST

METABOLIC SYNDROME & EARLY NUTRITION PROGRAMMING

The dangers of diabetes, high blood pressure and obesity have long been established, but only recently have scientists begun to unravel the strong link between them. Additionally, nutrition during pregnancy and in first year of life is clearly implicated in 'programming' an increased or decreased risk of developing the **Metabolic Syndrome**.

What is it?

Many people who suffer from diabetes, or high blood pressure or obesity also have one or more of the other conditions, although it may have gone unrecognised.

A person who is obese, for example, may also have diabetes, high blood pressure and abnormal changes in the fat levels in their blood. Individually, each of these conditions can lead to damage to the blood vessels, but when found together they are far more likely to do harm. The end result is that people with a combination of these problems become much more likely to suffer heart disease, stroke and other conditions related to problems with the blood vessels.

When a person has such a combination, they are said to have **Metabolic Syndrome**. This is also sometimes called **insulin resistance syndrome** (because one of the features is a very high level of the hormone insulin in the blood, which the body does not react to or is 'resistant' to) or **Syndrome X**.

Metabolic Syndrome is very common and becoming more so. In the USA, surveys estimate that as many as one in four adults has metabolic syndrome, and its occurrence has increased by 61 per cent in the past decade. UK research suggests that a similar number of people are affected here. It's more common in certain ethnic groups (such as Asian and Afro-Caribbean people) and among women with polycystic ovary syndrome (PCOS).

The problems found in Metabolic Syndrome include:

Central obesity - when fat is laid down around the abdomen, rather than spread evenly around the body. As a guide, waist measurement should be less than half your height. This works for adults and children. Alternatively, a waist circumference greater than 40in (101cm) in men and 35in (89cm) in women is considered high risk.

Abnormal fat levels in the blood - specifically, high levels of triglycerides and low levels of HDL (the so-called 'good') cholesterol, which can lead to *arteriosclerosis* (fatty plaques) on the walls of blood vessels.

High blood pressure - 130/85 mmHg or above.

Insulin resistance or glucose intolerance - an inability to use insulin properly or control blood sugar levels very well. This is a very important factor in metabolic syndrome.

A prothrombotic state - an increased tendency to make tiny clots in the blood.

A proinflammatory state - an increased tendency to inflammation.

Causes

Metabolic Syndrome is very complex and doctors and scientists have yet to work out exactly what goes on in the body at the level of the cells and molecules. However, there seem to be three contributory factors: inherited genetic factors, being overweight, physical inactivity.

Nutrition intake in pregnancy and first year of life affects the tendency to develop insulin resistance; this may also be affected by genetic make-up. If weight is gained and physical activity is low, insulin resistance and the **Metabolic Syndrome** may develop.