

# Obese teenagers face higher metabolic syndrome risk in South America than Europe

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Obese teenagers are much more likely to suffer from metabolic syndrome - which can lead to heart disease – if they live in Brazil than Italy, according to a study in the October issue of *IJCP*, the *International Journal of Clinical Practice*.

Researchers from the two countries looked at more than 500 obese teenage boys and girls to see if there was any difference in metabolic syndrome, an increasing worldwide problem where fat deposits lead to thickening and hardening of artery walls, increasing the risk of heart disease.

They found that 35 per cent of the Brazilian boys suffered from metabolic syndrome, compared with 24 per cent of the Italian boys.

They also discovered that boys were twice as likely as girls to suffer from metabolic syndrome, recording levels of 16 per cent for Brazilian girls and 12.5 per cent for Italian girls.

"We found that the prevalence of metabolic syndrome risk factors varied considerably between the two countries and that insulin resistance appears to be a major factor" says lead author Danielle Caranti, who carried out the study with Professor Ana Dâmaso from the Federal University of Sao Paulo and Professor Alessandro Sartorio from the Italian Institute for Auxology in Milan.

"It is likely that this reflects differences in genetic, environmental,

social, economic and dietary factors between the two countries."

Of the 509 teenagers who took part in the study, 110 were from Brazil (64 girls and 46 boys) and 399 were from Italy (255 girls and 144 boys). Their average age was 16 and their body mass index ranged from 35.1 to 37.3, which is over the 97th centile for their age and sex and indicates a severe level of obesity.

The researchers discovered a number of variations in the detailed blood tests they carried out.

They discovered that the Brazilian teenagers showed significantly higher levels of:

- Insulin resistance, which can cause problems such as Type 2 Diabetes, high blood pressure, abnormal cholesterol levels and heart disease.

Brazilian boys averaged 4.8 (Italian boys 2.7) and Brazilian girls averaged 3.5 (Italian girls 2.3).

- Fasting plasma glucose (blood sugar levels after an overnight fast).

Brazilian boys averaged 92.5 mg/dl (Italian boys 76.3) and Brazilian girls 90.7 (Italian girls 73.9).

- Triglycerides, the chemical form in which most fat exists. Brazilian boys averaged 130.9 mg/dl (Italian boys 105.6) and Brazilian girls 109.9 (Italian girls 90.4).

However, Italian teenagers showed significantly higher levels of:

- LDL cholesterol, which helps to form deposits that can narrow arteries and make them less flexible. Italian boys averaged 106.9 mg/dl (Brazilian boys 94.2) and Italian girls averaged 102.8 (Brazilian girls 90.0).

-- Systolic blood pressure, which measures the pressure in the arteries when the heart contracts and pushes blood out into the body. Italian boys averaged 129.3 (Brazilian boys 125.2) and Italian girls 122.8 (120.3).

"Previous studies have found that metabolic syndrome ranges from five per cent to 40 per cent in obese teenagers in different countries, mainly because of the different criteria used to define metabolic syndrome" says Danielle Caranti. "But few studies have made direct comparisons between two groups in this way.

"Our findings suggest that insulin resistance, together with the level of obesity, is a critical component in measuring metabolic syndrome risk in adolescence. It stood out in our study as the most frequently altered parameter when it came to the development of metabolic syndrome in Brazilian and Italian teenagers.

"We hope that our study will provide valuable information on why metabolic syndrome is more prevalent in some societies than others.

"Identifying the causes of metabolic syndrome is an important step towards developing effective long-term strategies to combat this worldwide emerging health problem."

Source: Wiley

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