

## **Iron deficiency 'reduces intelligence'**

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Iron deficiency can reduce red blood cell production. Teenage girls who suffer from iron deficiency may also have a low IQ, researchers have found. A study by researchers at King's College, London, found a significant link between low haemoglobin levels and poor mental performance.

Haemoglobin is a protein found in the red blood cells that plays a vital role in transporting oxygen to the tissues of the body. Iron is an essential component of haemoglobin. Without adequate supplies of iron in the diet, the body is unable to manufacture sufficient numbers of red blood cells.

In serious cases, this can lead to anaemia as the body struggles to cope with the consequent reduction in the supply of oxygen to the tissues. Symptoms of anaemia include general weakness, fatigue, brittle nails, paleness and loss of appetite.

The research focused on girls aged 11 to 18 who attended three comprehensive schools in North London. In total, 152 girls provided blood samples and information about their diet. They also underwent tests of mental performance known technically as cognitive function. They found those girls who were iron deficient to the point of suffering from anaemia had a significantly lower IQ. The difference remained significant, even after other factors such as social class, ethnic origin, dieting and menstruation were taken into account.

Previous research carried out by the same team led by Dr Michael Nelson suggests that between 10% and 30% of adolescent girls have poor iron reserves or mild iron deficiency anaemia.

The researchers, whose work will be published in the proceedings of the Nutrition Society, said: "We conclude that poor iron status is common among British adolescent girls, and that diet and iron status play important roles in determining cognitive function.

"These differences in cognitive function are likely to have important consequences in relation to learning ability and academic achievement."

Dr Nelson told BBC News Online there were two possible mechanisms that might explain why brain function was linked to iron levels. "It is possible that low haemoglobin levels are related to a reduced supply of oxygen to brain. This would mean that the brain was not able to function as effectively. "However, a number of enzymes which control the transmission of signals in the brain are also dependent on iron to function properly."

People who suffer from an iron deficiency should eat a diet which includes plenty of green leafy vegetables, lean meats, pulses such as baked beans and lentils and dried fruits. They should include a good source of vitamin C with each meal as it enhances iron absorption.