

'Body clock gene' diabetes clue

The workings of our internal body clock appear to be directly connected to our risk of diabetes, researchers claim.

International research published in the journal Nature Genetics found faults in a key 'clock gene' were linked to blood sugar levels and type II diabetes.

Some scientists already believe that our circadian rhythms (body clock) have a role to play in the condition, which affects millions worldwide.

But one expert said more evidence was needed, before a link was proved.

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Professor Philippe Froguel
Imperial College

Scientists say that unravelling the links between obesity, type II diabetes, and circadian rhythms could point the way towards new strategies to control or prevent the illness.

The fact that humans work on a rough 24-hour cycle, sleeping at night, and waking to be more active during the day, is controlled partly by hormones released by the body.

One, in particular, called melatonin, released by the pineal gland in the brain, is involved in drowsiness and the lowering of body temperature.

The researchers, from a variety of universities in the UK and abroad, scanned the genomes of thousands of people looking for associations between particular genetic variations and type II diabetes.

A team including scientists from Imperial College London found one genetic "variation" which appeared to be linked to a 20% increase in the risk of type II diabetes.

Another, including Oxford and Cambridge University scientists, discovered a second variation which could be linked to naturally higher blood sugar levels and diabetes risk.

However, it was the location of these variations on the human genome which suggested the connection to the internal body clock.

Both were connected to MTNR1B, a gene which helps control the action of melatonin on different parts of the body.

Bad sleepers

Professor Philippe Froguel, from Imperial College, said that the findings fitted with earlier research linking sleep problems with obesity, which increases the risk of type II diabetes.

"For example, we know that obese children tend to sleep badly and that people become more obese if

they are not having enough sleep.

"Our research demonstrates that abnormalities in the circadian rhythm may partly be causing diabetes and high blood sugar levels - we hope it will ultimately provide new options for treating people."

Professor Nick Wareham, the director of the MRC Epidemiology Unit in Cambridge, said: "This observation provides important clues about the possible mechanisms linking genes to diabetes risk."

However, sleep and circadian rhythm researcher Dr Jim Horne from the Sleep Research Centre at Loughborough University said it was too early to be suggesting that problems with the body clock might actually be responsible for obesity and diabetes.

He said: "There are other explanations for the link between obesity and sleep disturbance - people who eat too much may have disturbed sleep, or be drowsy or sleep during the day, and obese people may suffer from sleep apnoea which can disturb sleep.

"The evidence linking insufficient sleep with these changes is very contentious, and we should be cautious about drawing the wrong conclusions."

Separate research by researchers at Leeds University suggests that children with diabetes living in poorer households are less likely to have their blood sugar levels under control.

They looked at blood sugar levels in 1,742 Yorkshire children, mostly with the type I form of the disease, and found that fewer than 15% were reaching National Institute for Clinical Excellence targets.

Those from lower-income families were less likely to hit the target than those from more affluent families.

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