

Link between stress hormone and obesity in depressed and bipolar patients

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Martin Maripuu took his PhD at Umeå University in January 2016. In the team, led by Professor Rolf Adolfsson, are Associate Professor Karl-Fredrik Norrback, Mikael Wikgren, Pontus Karling and project coordinator Annelie Nordin Adolfsson. Credit: Umeå University

Low levels of the stress hormone cortisol are linked to obesity, high levels of fat in the blood and metabolic syndrome among patients with recurrent depressions or bipolar disorder. This according to a study at Umeå University in Sweden published in the *Journal of Affective Disorders*.

"These results provide clues to better understand the high prevalence of cardiovascular diseases in people with recurrent depressions or [bipolar disorder](#). The results may in the future contribute to better preventative treatments of cardiovascular diseases in these disorders," says Martin Maripuu, researcher at the Department of Clinical Sciences, Division of Psychiatry at Umeå University.

Bipolar disorder and recurrent depressions are lifelong diseases that are associated with a 10-15 year reduction in life expectancy. A strong contributing factor to the shortened life expectancy is the high prevalence of cardiovascular diseases. Stress, low physical activity and high energy intake are lifestyle factors linked to increased risk of metabolic and cardiovascular diseases.

One of the most important stress system in the body is called the HPA-axis. This system regulates the production and levels of the vital [stress hormone cortisol](#). Cortisol is also important for metabolism.

High cortisol levels over a long period of time is considered to contribute to the accumulation of fat. Stress normally leads to HPA-axis over

activity, which in turn leads to increased levels of cortisol. If the additional stress is prolonged, it may lead to underactivity in the stress system, with low levels of cortisol as a result.

In people with recurrent depressions and with bipolar disorder it has previously been shown that metabolic risk factors for cardiovascular diseases are common and that disturbances in the stress regulation system often occur.

In order to study the link between cortisol levels and metabolic diseases, 245 patients with bipolar disorder or recurrent depressions were analysed, together with 258 people in a control group. Researchers measured cortisol levels in participants after they had taken a so-called dexamethasone suppression test, which is used to discover early deviations in the [stress](#) system.

What the Umeå researchers now can show is that patients with bipolar disorder or recurrent depressions with low levels of cortisol to a larger extent than other patients suffer from:

- obesity (34 per cent in comparison to 11 per cent among other patients)
- dyslipidaemia, i.e. high levels of fat in the blood (42 per cent compared to 18 per cent among other patients), and
- metabolic syndrome (41 per cent in comparison to 26 per cent among other patients).

On the other hand, there was no correlation between [cortisol levels](#) and high blood sugar levels or high blood pressure.

"The results show that [cortisol](#) regulation is linked to worsened physical health in people with bipolar disorder or recurrent depressions. However, further studies are needed in order to better understand these

associations," says Martin Maripuu.

More information: Martin Maripuu et al. Relative hypocortisolism is associated with obesity and the metabolic syndrome in recurrent affective disorders, *Journal of Affective Disorders* (2016). [DOI: 10.1016/j.jad.2016.06.024](https://doi.org/10.1016/j.jad.2016.06.024)

Provided by Umea University

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