

# Depression, adverse childhood events and sleep disturbances linked to changes in the immune system

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Adverse childhood experiences and sleep disturbances interfere with immune system regulation, shows research from the University of Eastern Finland. These changes were observed in a population that already carried a significant burden of psychological symptoms such as depression.

Major depressive disorder (MDD), adverse childhood experiences and sleep disturbances are all characterised by increased physical morbidity and changes in the way our [immune system](#) works. However, the interrelationships between the related disease mechanisms are not fully understood yet.

The study analysed the complex biological mechanisms that are associated with MDD, with the hope of opening up new avenues for increasingly personalised treatment. There is a need to conduct further research into the underlying factors of MDD, as it is one of the leading causes of disability globally. Changes in immune system regulation have been suggested to be a key factor in mediating the disease burden associated with MDD and its somatic comorbidities. Immune system mediators also play a role in blood coagulation and modulation of neural networks.

The study constitutes part of the population-based Kuopio Depression Study, a seven-year follow-up cohort study carried out in Eastern

Finland. Data for the study was collected through surveys charting immune system biomarkers, psychometric evaluations and venous blood samplings. The study found that serum levels of interleukin-5 were elevated in persons with MDD. Interleukin-5 has been previously associated with immune system T helper cells and conditions such as allergy. Persons with adverse [childhood experiences](#) had lower levels of adiponectin, which is an anti-inflammatory substance mainly secreted from adipose tissue. Abuse of alcohol in the childhood home was also associated with lower levels of the plasminogen activator inhibitor PAI-1, which regulates blood clot dissolving. Elevated PAI-1 levels, on the other hand, were associated with [sleep disturbances](#).

The findings are significant, as the observed changes in immune system mediator levels can play a role in an individual's well-being through a variety of mechanisms, for example by affecting the sleep-wake cycle and the systemic anti-inflammatory buffering capacity.

Provided by University of Eastern Finland

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