

# Child maltreatment alters hormone levels linked to obesity

September 24 2014

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(Medical Xpress)—Children who are maltreated may be at an increased risk of obesity and inflammatory disorders because of low levels of leptin—a hormone involved in regulating appetite, according to new research from King's College London.

The findings, published today in *Translational Psychiatry*, suggest leptin deficiency may contribute to physical health problems associated with [early life](#) stress, and provide a possible target in disease prevention.

Dr Andrea Danese, from the MRC Social, Genetic and Developmental Psychiatry (SGDP) Centre and the Department of Child & Adolescent Psychiatry at the Institute of Psychiatry, Psychology & Neuroscience (IoPPN) at King's, who led the study, said: "Previous studies have shown a link between early life stress and [obesity](#), but the underlying

mechanisms driving this association have remained unclear. Our findings suggest that blunted leptin release in relation to increasing levels of adiposity can contribute to the obesity risk among maltreated children. Knowledge of how childhood experiences of maltreatment become biologically embedded is key to understanding risk and planning effective treatments."

Leptin is a hormone released in response to increasing levels of fat. It reduces appetite and increases energy expenditure. Previous studies have shown that mice lacking leptin persist in overeating despite becoming obese. Leptin is also thought to increase the severity of immune system reactions, however this effect is less well understood.

In this study, researchers measured [leptin levels](#), body mass index (BMI) and levels of an inflammation marker called C-reactive protein in 172 12 year old children from the Environmental Risk (E-Risk) Longitudinal Study. Of these, 81 children were from homes with evidence of physical maltreatment, and 91 were from homes without evidence of maltreatment. The two groups were matched for gender and socioeconomic status.

The researchers found that maltreated children had lower leptin levels in relation to increasing levels of obesity and inflammation, compared to the group of non-maltreated children. Findings were not explained by time of the day at sample collection, history of food insecurity, pubertal maturation, or depressive symptoms.

Additionally, they found that maltreated and non-maltreated children did not differ in birth weight, a measure that is correlated with leptin levels at birth, indicating that the differences in leptin levels observed at age 12 were likely to have emerged during childhood, after maltreatment occurred.

The authors suggest that leptin deficiency may contribute to onset, persistence, and progression of physical health problems in maltreated children. Additional studies are required to replicate these initial findings and to explore their clinical implications.

**More information:** Danese, A. et al. 'Leptin deficiency in maltreated children' published in *Translational Psychiatry* [DOI: 10.1038/tp.2014.79](https://doi.org/10.1038/tp.2014.79)

Provided by King's College London

Citation: Child maltreatment alters hormone levels linked to obesity (2014, September 24)  
retrieved 24 April 2024 from

<https://medicalxpress.com/news/2014-09-child-maltreatment-hormone-linked-obesity.html>

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