

# Study links physical violence, stress hormone in women

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Credit: George Hodan/public domain

A new study links physical violence against women by male partners to a disruption of a key steroid hormone that opens the door potentially to a variety of negative health effects.

The study by the University of Oregon and the Oregon Social Learning Center looked at daily fluctuations of [cortisol](#) levels in men and women.

Cortisol was drawn from saliva samples of 122 couples during on-site assessments and four times a day—upon waking up, 30 minutes later, in mid to late afternoon and at bedtime—over four consecutive days.

Cortisol levels typically rise as people wake up, peak shortly thereafter and then decline rapidly. Researchers compared the cortisol levels with the frequency of interpersonal violence as reported by both partners in the relationships.

In the journal *Psychoneuroendocrinology*, the researchers noted a disruption from normal diurnal (daily) cortisol rhythms only in women as seen by a slower decline through the afternoons and higher-than-normal levels late in the day.

Researchers for years have suspected that the hypothalamic-pituitary-adrenal axis (HPA) regulatory system, which controls [cortisol production](#) in response to stress, is adversely influenced by violence.

"Existing studies have focused on the women's HPA-axis activity only," said the study's lead author Hyoun K. Kim, a scientist at the Oregon Social Learning Center and courtesy researcher in the UO Department of Psychology. "We indeed found that women's, but not men's, victimization was associated with multiple indicators of diurnal cortisol levels. It has been argued that interpersonal violence is more detrimental for women than for men, and our study suggests that it might indeed be due to disruptions in HPA-axis activity."

Men in the study were recruited in 1983, when they were 9 to 10 years old, for the Oregon Social Learning Center's longitudinal Oregon Youth Study. They were drawn from mostly lower socioeconomic status families living in neighborhoods with higher-than-average juvenile delinquency. Their romantic partners were incorporated in a separate couples' study when the men reached 17 to 18 years of age. Deborah M.

Capaldi, a research scientist at the Oregon Social Learning Center is the principal investigator of the study.

The study's duration and large community-based sample size—not just data from women seeking help at shelters as in similar studies—make for robust findings, said J. Josh Snodgrass, a biological anthropologist at the UO. He currently is studying the relationships of various biomarkers, including cortisol, to health in populations around the world.

"We think we captured a good window on the subjects' everyday rhythms," said Snodgrass, who was invited by the non-profit center to coordinate cortisol sampling and analysis. "There are fluctuations, such as may occur on a very bad day, but it's minor and on the margins; they are easy to weed out when you have four days. It's a high-quality sample. We think it's the environmental and behavioral pieces that are influencing the cortisol rhythms.

The findings, the six co-authors said, show a correlation between violence and [cortisol levels](#) in women. However, they do not rule out the possibility that abnormal cortisol cycling may contribute to interpersonal violence.

"There are studies that show that dysregulated HPA axis activity is related to behavioral problems in children," Kim said. "We cited some studies that showed that cortisol is related to interpersonal violence in men, but that finding is also based on a cross-sectional design with a very small sample of violent men and limited methods."

The team, she noted, is now looking at the women's dysregulated daily cortisol rhythms for connections to subsequent physical and psychological outcomes to confirm a gender specific vulnerability to [interpersonal violence](#) in relationships.

**More information:** [www.psyneuen-journal.com/article/S0306-4530\(2014\)2900353-9/abstract](http://www.psyneuen-journal.com/article/S0306-4530(2014)2900353-9/abstract)

Provided by University of Oregon

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