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Research team presents new data on how intermittent fasting affects female hormones

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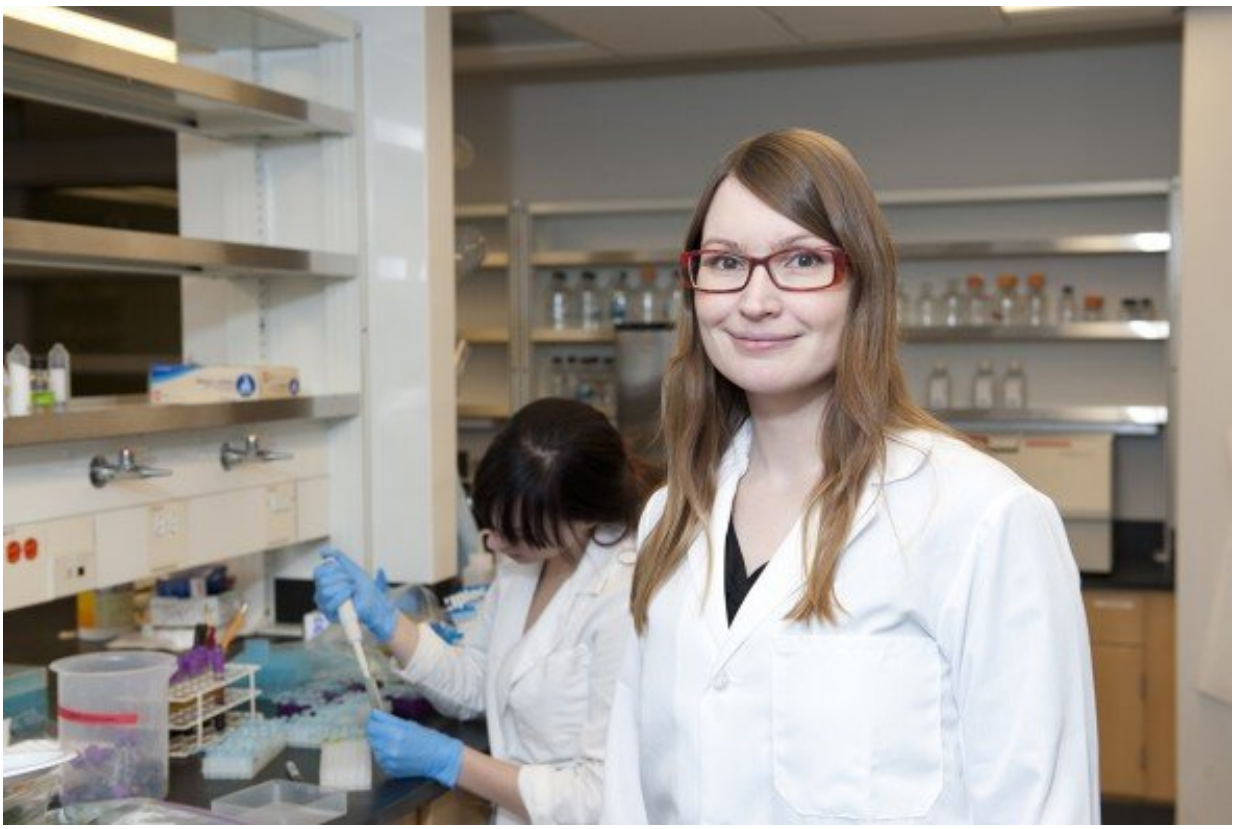

Krista Varady, professor of nutrition. Credit: Roberta Dupuis-Devlin

Intermittent fasting has been shown to be an effective way to lose weight, but critics have worried that the practice may have a negative impact on women's reproductive hormones. Now, a team of University

of Illinois Chicago researchers has published a study in *Obesity* that brings new evidence to the table.

The researchers, led by Krista Varady, UIC professor of nutrition, followed a group of pre- and post-menopausal obese women for a period of eight weeks on the "warrior diet" method of intermittent fasting.

The warrior diet prescribes a time-restricted feeding window of four hours per day, during which dieters can eat without counting calories before resuming a water fast until the next day.

The researchers measured the differences in hormone levels, obtained by analyzing blood sample data, in groups of dieters who stuck to four- and six-hour feeding windows against a control group that followed no diet restrictions.

Varady and her team found that levels of sex-binding globulin hormone, a protein that carries reproductive hormones throughout the body, was unchanged in the dieters after eight weeks. The same held true for both testosterone and androstenedione, a steroid hormone that the body uses to produce both testosterone and estrogen.

However, dehydroepiandrosterone or DHEA, a hormone that fertility clinics prescribe to improve ovarian function and egg quality, was significantly lower in both pre-menopausal and post-menopausal women at the end of the trial, dropping by about 14%.

While the drop in DHEA levels was the most significant finding of the study, in both pre- and post-menopausal women, DHEA levels remained within the normal range by the end of the eight-week period.

"This suggests that in pre-menopausal women, the minor drop in DHEA levels has to be weighed against the proven fertility benefits of lower

body mass," Varady said. "The drop in DHEA levels in post-menopausal women could be concerning because menopause already causes a dramatic drop in estrogen, and DHEA is a primary component of estrogen. However, a survey of the participants reported no negative side effects associated with low estrogen post-menopause, such as sexual dysfunction or skin changes."

As an added benefit, since high DHEA has been linked to breast cancer risk, Varady said a moderate drop in levels might be helpful in reducing that risk for both pre- and post-menopausal women.

The study measured levels of estradiol, estrone and progesterone—all hormones vital to pregnancy—as well, but only in post-menopausal women, due to the changing levels of these hormones throughout pre-menopausal women's menstrual cycles. Among post-menopausal women, there was no change in these hormones at the end of eight weeks.

Women in both the four-hour and six-hour dieting groups experienced weight loss of 3% to 4% of their baseline weight throughout the course of the study, compared with the control group, which had almost no weight loss. The dieters also saw a drop in insulin resistance and in biomarkers of oxidative stress.

Perimenopausal women, who are typically in their 40s, were excluded from the study.

Still, Varady said, "I think this is a great first step. We've observed thousands of pre- and post-menopausal women through different alternate-day fasting and time-restricted eating strategies. All it's doing is making people eat less. By shortening that eating window, you're just naturally cutting calories. Much of the negative information on intermittent fasting reported has come from studies on mice or rats. We need more studies to look at the effects of intermittent fasting on

humans."

Co-authors of the study are Faiza Kalam, Rand Akasheh, Sofia Cienfuegos, Aparna Ankireddy, Kelsey Gabel, Mark Ezpeleta, Shuhao Lin, Chandra Tamatam, Sekhar Reddy, Bonnie Spring and Seema Khan.

More information: Faiza Kalam et al, Effect of time-restricted eating on sex hormone levels in premenopausal and postmenopausal females, *Obesity* (2022). DOI: 10.1002/oby.23562

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