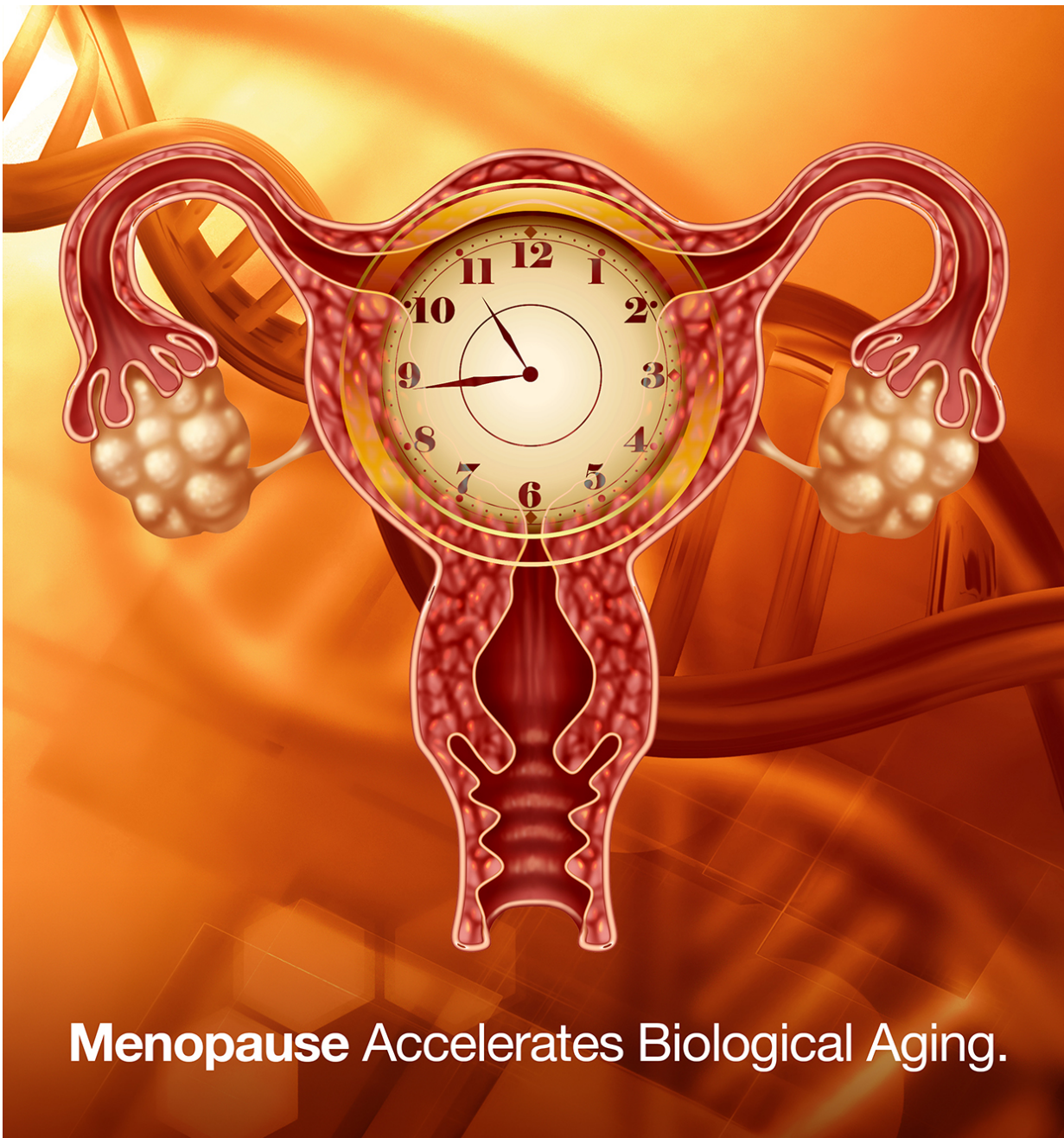


Hot news flash! Menopause, insomnia accelerate aging

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Menopause, insomnia make women's bodies age faster. Credit: Steve Horvath/UCLA

Two separate UCLA studies reveal that menopause and the insomnia that often accompanies it make women age faster.

The dual findings, respectively published July 25 in the *Proceedings of the National Academy of Sciences* and *Biological Psychiatry*, suggest these factors could increase [women's](#) risk for aging-related diseases and earlier death

"For decades, scientists have disagreed over whether [menopause](#) causes aging or aging causes menopause," said Steve Horvath, a professor of human genetics and biostatistics at the David Geffen School of Medicine at UCLA and UCLA Fielding School of Public Health, and a senior author on both studies. "It's like the chicken or the egg: which came first? Our study is the first to demonstrate that menopause makes you age faster."

"Not getting restorative sleep may do more than just affect our functioning the next day; it might also influence the rate at which our biological clock ticks," said Judith Carroll, an assistant professor of psychiatry at the UCLA Semel Institute for Neuroscience and Human Behavior and the Cousins Center for Psychoneuroimmunology, and first author of the sleep study. "In the women we studied, those reporting symptoms such as restless sleep, waking repeatedly at night, having difficulty falling asleep, and waking too early in the morning tended to be older biologically than women of similar [chronological age](#) who reported no symptoms."

For their findings, both studies used a "biological clock" developed by Horvath, which has become a widely used method for tracking the epigenetic shift in the genome. Epigenetics is the study of changes to DNA packaging that influence which genes are expressed but don't affect the DNA sequence itself.

The Menopause Connection

In the menopause study, Horvath and first author Morgan Levine tracked methylation, a chemical biomarker linked to aging, to analyze DNA samples from more than 3,100 women enrolled in four large studies, including the Women's Health Initiative (WHI) a major 15-year research program that addressed the most common causes of death, disability and poor quality of life in [postmenopausal women](#). They measured the biological age of cells from blood, saliva and inside the cheek, to explore the relationship between each woman's chronological age and her body's biological age.

"We discovered that menopause speeds up cellular aging by an average of 6 percent," said Horvath. "That doesn't sound like much but it adds up over a woman's lifespan."

Take, for example, a woman who enters early menopause at age 42. Eight years later, he said, her body would be a full year older biologically than another 50-year-old woman who entered menopause naturally at age 50.

"On average, the younger a woman is when she enters menopause, the faster her blood ages," explained Levine, a postdoctoral researcher in Horvath's lab. "This is significant because a person's blood may mirror what's happening in other parts of the body, and this could have implications for death and disease risk."

The Importance of Sleep

In the sleep study, Carroll and her colleagues drew their data from more than 2,000 women in the WHI. Using the epigenetic clock, they found that postmenopausal women with five insomnia symptoms were nearly two years older biologically than women the same chronological age with no insomnia symptoms.

"We can't conclude definitively from our study that the insomnia leads to the increased epigenetic age, but these are powerful findings," said Carroll. "In the future, we will need to carry out studies of the same individuals over an extended period of time to determine cause-and-effect relationships between biological age and sleep disorders."

While both studies are bad news for many women, Horvath suggests that scientists in the future may use the epigenetic clock as a diagnostic tool to evaluate the effects of therapies, like hormone therapy for menopause.

"The big question is which menopausal hormone therapy offers the strongest anti-aging effect while limiting health risks," said Horvath.

"No longer will researchers need to follow patients for years to track their health and occurrence of diseases. Instead we can use the epigenetic clock to monitor their cells' aging rate and to evaluate which therapies slow the biological aging process," explained Horvath. "This could greatly reduce the length and costs of clinical trials and speed benefits to women."

More information: Menopause accelerates biological aging, *Proceedings of the National Academy of Sciences*, www.pnas.org/cgi/doi/10.1073/pnas.1604558113

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