Researchers zero in on cognitive difficulties associated with menopause

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The memory problems that many women experience in their 40s and 50s as they approach and go through menopause are both real and appear to be most acute during the early period of post menopause. That is the conclusion of a study which appears today in the journal *Menopause*.

"Women going through menopausal transition have long complained of cognitive difficulties such as keeping track of information and struggling with mental tasks that would have otherwise been routine," said Miriam Weber, Ph.D. a neuropsychologist at the University of Rochester Medical Center (URMC) and lead author of the study. "This study suggests that these problems not only exist but become most evident in women in the first year following their final menstrual period."

The study followed 117 women, who were grouped into categories based on criteria established in 2011 by the Stages of Reproductive Aging Workshop +10, which consisted of an international consortium of researchers.

Study participants took a variety of tests assessing their cognitive skills, reported on menopause-related symptoms such as hot-flashes, sleep disturbance, depression and anxiety, and gave a sample of blood to determine current levels of estradiol (an indicator of estrogen levels) and follicle stimulating hormone. Results were analyzed to determine if there were group differences in cognitive performance, and if these differences were due to menopausal symptoms.

The study grouped participants into four stages: late reproductive, early and late menopausal transition, and early post menopause. The late reproductive period is defined as when women first begin to notice subtle changes in their menstrual periods, such as changes in flow amount or duration, but still have regular menstrual cycles.

Women in the transitional stage experience greater fluctuation in menstrual cycles – from a difference of 7 days or more in the early phase of transition to 60 days or longer in the later phase. Hormone levels also begin to fluctuate significantly during this time. This transition period can last for several years.

The researchers also evaluated women in early post menopause, defined as the first year after which a woman experienced her last menstrual period.

The study participants were assessed with a comprehensive battery of tests to evaluate a variety of cognitive skills. These included tests of attention, verbal learning and memory, fine motor skills and dexterity, and "working memory" – or the ability to not only take in and store new information, but also manipulate it.

These tests are similar to daily tasks such as staying focused on something for a period of time, learning a new telephone number, and making a mental list of groceries and then recalling specific items as required as one wanders the aisles of a grocery store.

The researchers found that women in the early stage of post menopause performed worse on measures of verbal learning, verbal memory and fine motor skill than women in the late reproductive and late transition stages.

The researchers also found that self-reported symptoms such as sleep

difficulties, depression, and anxiety did not predict memory problems. Nor could these problems be associated with specific changes in hormone levels found in the blood.

"These findings suggest that cognitive declines through the transition period are independent processes rather than a consequence of sleep disruption or depression," said Weber. "While absolute hormone levels could not be linked with cognitive function, it is possible that the fluctuations that occur during this time could play a role in the memory problems that many women experience."

The process of learning new information, holding on to it, and employing it are functions associated with regions of the brain known as the hippocampus and prefrontal cortex. These parts of the brain are rich with estrogen receptors.

"By identifying how these memory problems progress and when women are most vulnerable, we now understand the window of opportunity during which interventions – be those therapeutic or lifestyle changes – may be beneficial," said Weber. "But the most important thing that women need to be reassured of is that these problems, while frustrating, are normal and, in all likelihood, temporary."

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