Why Women's Brains Age Differently: Sex Differences in Alzheimer's and Menopause

BrainGuide by UsAgainstAlzheimer's
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Did you know women are nearly twice as likely as men to develop Alzheimer's? This page explores how hormonal changes during menopause may impact brain health, why women face different risks for Alzheimer's, and what researchers are learning about menopause and brain aging.

Let's Talk Menopause

Nearly every woman who lives long enough will experience menopause. Menopause begins with perimenopause, a transition that can last 2 to 8 years (average 4). During this time, levels of estrogen and progesterone change and decrease. Perimenopause typically begins in a woman's mid to late 40s, though the timing can vary (1). For example, Black and Latina women often begin perimenopause about two years earlier compared to white women (2). Perimenopause is marked by symptoms such as difficulty sleeping, irregular periods, and hot flashes and menopause is officially confirmed after a woman has gone a year without having a period (3).

Although education and resources around menopause are on the rise, perimenopause still tends to be a confusing experience. Many women suffer through disruptive symptoms for years without adequate medical guidance, validation, or support—navigating a turbulent time in their health with far too little help.

Perimenopause is more than just a shift in reproductive function and challenging symptoms — it is also a time of increased risk for the development of disease and an opportunity for brain health prevention.

The Connection to Alzheimer's

Women are twice as likely as men to develop Alzheimer's disease. Black people, including women, are twice as likely to have Alzheimer's compared with White people, while Latino people are roughly one-and-a-half times as likely to develop Alzheimer's (4). Scientists have assumed that women are more likely to get Alzheimer's because they tend to live longer than men.

Yet, women have historically been underrepresented in clinical trials, leading to a lack of real data about sex-specific differences in disease risk. Researchers, unsatisfied with these explanations, are digging deeper. They're exploring how biological, social, and cultural factors may contribute to women's higher risk (5). One area of growing interest is menopause. Scientists believe one reason for the increased risk may lie in the brain changes that begin during this transition, particularly those linked to the decline of estrogen — a hormone essential not just for reproduction, but for brain energy and protection.

While Alzheimer's is a disease that often appears later in life, it begins to develop in the brain as early as middle age. This makes the menopausal transition —when many of these early brain changes may be taking shape—a potentially critical window for both understanding risk and taking action (6).

Social determinants also play a major role. Factors such as access to education, health care, economic opportunity, and the experience of racial discrimination all influence long-term brain health — and women, especially women of color, face disproportionate barriers across these areas. These factors can add up over decades, creating unequal health risks later in life.

The Connection to Alzheimer's

During perimenopause and menopause, hormone levels begin to shift, and these changes can affect how the brain functions and ages. Estrogen plays a crucial role in brain health. In addition to its reproductive role, estrogen supports brain functioning by pulling glucose — the brain's main fuel — into cells for energy.

As estrogen levels drop during menopause, the brain may lose its ability to use glucose efficiently. This "energy crisis" can trigger the brain to seek out alternative fuel sources, and in some cases, the brain may even begin breaking down its own tissue for energy. These changes have been linked to early markers of Alzheimer's disease, such as the buildup of amyloid plaques and altered brain structure (7).

Many women report symptoms like "brain fog," forgetfulness, or trouble focusing during this transition. These cognitive shifts can be frustrating —and for some, deeply unsettling. It's not uncommon to experience a dip in confidence, especially at work or in roles that demand mental sharpness, memory, and multitasking. While common, these signs are also part of the bigger picture of how menopause impacts cognitive function. Understanding these changes offers a chance not only to validate women's experiences — but to act earlier and more effectively in protecting brain health (8).

Estrogen: A Brain Protector?

Estrogen does more than regulate reproduction. When estrogen declines during menopause, the brain can become more vulnerable to changes. Could estrogen help guard against Alzheimer's? That is the question researchers are asking as they investigate hormone replacement therapy (HRT). So far, results are mixed. Some studies show promise, while others suggest timing and individual factors matter. Clinical trials are continuing to explore whether certain types of HRT, given at the right time, may help reduce the risk of Alzheimer's disease. There is some evidence to suggest that beginning HRT in younger women carries less risk and would be safer to use within 10 years of the start of menopause (9).

Talking to Your Doctor

If you're noticing changes in memory or thinking, especially during perimenopause or menopause—speak up. Too often, women's symptoms are dismissed or misattributed to stress or depression. Researchers have highlighted that women are more likely to be told their symptoms are psychological rather than biological. Don't hesitate to ask your provider about:

- Cognitive screening
- Hormone levels
- How menopause may be affecting your brain

Your concerns are valid and deserve attention.

Keep the Conversation Going

Unlike other milestones like puberty or pregnancy, menopause is often silent. But it doesn't have to. Talking about menopause helps break down stigma and ensures women get the support they need. Share your experience. Ask the women in your life about theirs. The more we talk, the more we learn — and the better prepared we can support women through every stage of life—and preserve long-term brain health.

1. https://womenshealth.gov/menopause/menopause-basics
2. https://www.healthcentral.com/condition/menopause/menopause-different-women-color
3. https://www.nia.nih.gov/health/menopause/what-menopause
4. https://www.alz.org/professionals/public-health/public-health-topics/health-equity
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