International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Bajwa AR. Int J Reprod Contracept Obstet Gynecol. 2026 Aug;15(8):3380-3384
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20262595

Letter to the Editor

Subjective cognitive complaints in premenopausal women: an overlooked clinical reality demanding recognition

Sir,

We write to draw urgent clinical and research attention to a phenomenon that affects millions of women worldwide yet remains systematically underdiagnosed, poorly understood, and frequently dismissed: subjective cognitive complaints (SCC) in premenopausal women. While cognitive difficulties during the perimenopause and postmenopause have garnered increasing scientific interest, the experiences of women who present with genuine cognitive concerns before the formal onset of menopause – during the late reproductive and early menopausal transition stages – represent a critical and neglected clinical frontier.

Defining the problem: what are subjective cognitive complaints?

Subjective cognitive complaints refer to a woman's self-perceived decline in cognitive abilities – including memory, attention, processing speed, word retrieval, and executive function – in the absence of, or prior to, detectable deficits on standard objective neuropsychological tests.

Common expressions include forgetting names mid-conversation, losing train of thought, difficulty concentrating on complex tasks, and a pervasive mental fogginess colloquially described as "brain fog."

Key epidemiological finding

Perimenopausal women are three times more likely than premenopausal women to report memory loss, with nearly half rating symptoms as at least moderately severe.[4,21] Critically, subjective memory complaints in perimenopausal women have been most associated with working memory and complex attention, not merely verbal episodic learning.[22] A landmark systematic review and meta-analysis published in 2025 confirmed that perimenopausal women experience significant declines in working memory and attention from the premenopausal stage onward, with further declines observed in postmenopause.[12,18]

Crucially, no significant differences in cognition were observed between perimenopausal and postmenopausal women, suggesting the trajectory of decline begins well before natural menopause, in the premenopausal transition itself.

Pathophysiology: the neurobio-logical basis of cognitive vulnerability

SCC in premenopausal women is not a somatic amplification disorder or a manifestation of psychological distress alone. It reflects genuine neurobiological changes driven by fluctuating and declining reproductive hormones – most critically, estradiol.

Estrogen as a neuroprotective agent

Estradiol (17β-estradiol), the primary ovarian estrogen, is a potent neuroactive steroid that crosses the blood–brain barrier and exerts profound effects throughout the central nervous system. Its neuroprotective actions include the following.

Enhancement of synaptic plasticity

Estradiol increases dendritic spine density in the hippocampus and prefrontal cortex – regions governing memory and executive function. Fluctuating estrogen levels in premenopause disrupt this synaptic scaffolding, impairing information encoding and retrieval.

Modulation of neurotransmitter systems

Estrogen receptors are expressed throughout the cholinergic basal forebrain, dopaminergic mesolimbic pathways, and noradrenergic locus coeruleus.

Estradiol preserves acetylcholine synthesis, modulates dopamine receptor sensitivity in frontostriatal circuits governing working memory and executive control, and maintains norepinephrine release critical for arousal, attention, and vigilance.[1,2] Declining estrogen disrupts all three systems simultaneously.

Mitochondrial neuroprotection

Estradiol enhances mitochondrial biogenesis, increases ATP production in neurons, reduces oxidative stress via superoxide dismutase upregulation, and limits reactive oxygen species accumulation.[9]

Loss of these effects during hormonal transition leaves neurons metabolically vulnerable – especially hippocampal pyramidal neurons.

Anti-amyloid and anti-tau effects

Estrogen promotes alpha-secretase over beta-secretase activity in amyloid precursor protein processing, thereby reducing amyloid-beta production. In vivo models confirm that estrogen administration reduces amyloid plaque formation and may attenuate tau hyperphosphorylation, raising the possibility that premenopausal SCC reflects the earliest stage of a neurobiological cascade toward Alzheimer's risk.[20]

Neuroplasticity under hormonal stress

The concept of experience-dependent neuroplasticity must be foregrounded in discussions of premenopausal SCC. The brain is not a static organ; it continuously remodels its structure and function in response to hormonal signalling. Estrogen, acting through both genomic (ER-α, ER-β) and non-genomic membrane-associated pathways, regulates brain-derived neurotrophic factor (BDNF), neurogenesis in the hippocampal dentate gyrus, and long-term potentiation – the synaptic mechanism underlying learning and memory formation. When reproductive hormones begin their irregular fluctuation in the premenopausal transition – often years before menopause – the brain's adaptive plasticity mechanisms are challenged. Neuroimaging studies using resting-state functional connectivity MRI have demonstrated that women with greater subjective cognitive complaints show weaker negative functional connectivity within the frontal cortex (executive control network) and stronger positive connectivity within the right middle temporal gyrus. Altered brain lymphatic (glymphatic) function, as measured by the DTI-ALPS index, fully mediates the relationship between estrogen levels and cognitive accuracy ($r=0.588$, $p<0.01$).

The 2025 Menopause Society review further confirms that elevated estrogen receptor density during the menopause transition – once thought adaptive – is paradoxically associated with poorer memory outcomes, while alterations in cerebrovascular reactivity and brain energy metabolism underscore the structural reality of menopause's impact on neural integrity. These findings collectively establish that SCC in premenopausal women is a reflection of measurable neuroplastic reorganization, not psychosomatic amplification.

Critical insight – neuroplasticity window

The premenopausal transition represents a critical neuroplasticity window. Estrogen-dependent synaptic remodelling is most susceptible to disruption during periods of hormonal variability. Interventions aimed at supporting cognitive reserve during this window – including hormonal, lifestyle, and cognitive training approaches – may have greater efficacy precisely because the brain remains plastic and responsive to modulation.

Altered brain connectivity and dementia risk

Of particular concern is emerging evidence linking premenopausal SCC to longer-term neurological risk. Vega et al demonstrated that high levels of cognitive complaints may reflect changes in brain connectivity that represent a potential marker for late-life cognitive dysfunction, even when performance on standardised cognitive testing remains within normal limits.[19] Subjective cognitive decline (SCD) with preserved objective performance is now recognised as a stage 1 preclinical Alzheimer's disease risk marker, associated with increased likelihood of Alzheimer's biomarker abnormalities and future cognitive decline.[6,15,17] Furthermore, a 2024 meta-analysis confirmed that subjective cognitive decline is associated with a significantly elevated level of risk for future dementia and mild cognitive impairment. Given that women bear a disproportionate burden of Alzheimer's disease globally, the window of premenopausal SCC may represent the earliest clinically accessible opportunity for identification and intervention.

Table 1: Key statistics on the occupational and economic impact of menopausal cognitive symptoms on the working female population.

Statistic	Finding	Source
Workforce prevalence	~25% of working women underperforming due to menopause-related cognitive symptoms	Joinmidi, 2025
Weekly interference	4 in 10 women report symptoms interfere with work performance weekly	Nat'l Women Survey, 2024
Brain fog prevalence	86% of surveyed perimenopausal/menopausal women report brain fog and difficulty concentrating	Hone Health Survey, 2025
Annual economic cost	$1.8 billion in lost working time annually (US women)	Mayo Clinic Study
Sleep-related productivity loss	$2.2 billion annually – women aged 42–64	Hone Health, 2025
Career disruption	33% of women changed, paused or reduced work; 16.4% changed jobs	Swiss Research, 2024
Job attrition	13% quit jobs; 15% considered quitting due to menopausal symptoms	Korn Ferry/Vira Health, 2023

The impact on working women: an invisible productivity crisis

For many women, the menopausal transition coincides precisely with the prime of their professional lives – a period when the demands of parenting have eased and years of accumulated expertise position them for leadership and senior responsibility. The cognitive symptoms of this transition therefore strike at the most consequential juncture in women's careers, with far-reaching consequences for individuals, organisations, and national economies.

A 2025 survey by Hone Health of over 1,000 working women in perimenopause or postmenopause found that brain fog and difficulty concentrating affected 86% of respondents – second only to sleep disturbances (90%) and fatigue (87%) as determinants of impaired work capacity. Critically, a large survey of more than 8,000 women globally found that despite two-thirds of perimenopausal women experiencing symptoms of brain fog, mood swings and fatigue, more than 60% reported they did not feel informed about menopause at all, exposing a profound failure of both clinical communication and workplace culture.[8] The occupational consequences are compounded by the phenomenon of presenteeism – being physically at work while cognitively absent. Research suggests presenteeism costs employers up to ten times more than absenteeism. Among women in leadership and senior professional roles – whose cognitive performance is inseparable from organisational outcomes – the hidden cost of unaddressed SCC is immeasurable. The Swiss research finding that 20.5% of women reduced working hours and 16.4% changed jobs due to menopausal symptoms represents not merely personal disruption but systemic erosion of hard-won gender equity in the workplace.

SCC as a legitimate clinical entity: breaking the dismissal cycle

A recurring and damaging narrative in clinical encounters is the dismissal of premenopausal women's cognitive complaints as anxiety, depression, sleep deprivation, or the natural consequence of busy lives. This dismissal has several pernicious consequences:

Delayed diagnosis

Women presenting with SCC may harbour early, reversible neurobiological changes that could be addressed through hormonal or lifestyle interventions – but these opportunities are lost when complaints are not taken seriously.

Psychological harm

Women who cannot reconcile their experienced cognitive decline with clinicians' reassurances suffer increased anxiety, loss of professional confidence, and, in some cases, premature career withdrawal.

Missed research opportunities

Longitudinal studies require early enrolment of symptomatic premenopausal women to understand the natural history of SCC and identify predictors of progression to objective decline.

Perpetuation of stigma

Continued medicalisation of women's cognitive complaints as psychosomatic sustains a gender bias in neurology and psychiatry that has historically disadvantaged female patients.

A 2024 systematic review in menopause examined validated subjective cognitive measures for menopausal research and found that while 28 studies across 15 measures showed adequate content validity, other psychometric properties were either poor or not reported, underscoring the urgent need for standardised, validated tools specifically designed to capture the nuanced cognitive experiences of premenopausal and perimenopausal women.[24] The absence of such tools has systematically biased research toward objective test performance, at the expense of clinically meaningful subjective experience.

The CAN-PROTECT finding

A major study of 896 post-menopausal participants found that perimenopausal symptoms – including brain fog, sleep problems, and mood changes – significantly predicted both current subjective cognitive function (measured by the Everyday Cognition ECog-11 scale) and emergent neuropsychiatric symptoms (measured by the Mild Behavioral Impairment Checklist).[3]

Solidarity among women: a shared but silenced experience

The social dimension of SCC cannot be overlooked. While scientific discourse focuses on pathophysiology and measurable outcomes, individual women experiencing cognitive symptoms before menopause often carry their concerns in isolation – embarrassed to report symptoms that seem subjective or vague, fearful of professional judgment, or simply unaware that their experience is both common and biologically grounded. We therefore call on clinicians, researchers, and health advocates to foster a culture of open recognition in consultation rooms, workplaces, and peer support environments that normalises the experience of cognitive change during the reproductive transition. The near-universal (93.75%) prevalence of reported cognitive changes within 24 months of surgical menopause – mirroring the experiences of women in natural transition – powerfully illustrates that

SCC is not an anomalous individual complaint but a near-universal biological experience demanding collective clinical response.[14] Perimenopausal women are three times more likely than premenopausal women to report memory loss, and nearly half rate their symptoms as at least moderately severe. Yet the majority receive no guidance, validation, or treatment. In an era of personalised medicine, this represents an unconscionable gap. The cognitive experiences of premenopausal and perimenopausal women deserve the same clinical seriousness afforded to cardiovascular, bone mineral, or metabolic changes during this transition.

Recommendations

Clinical practice

Clinicians should routinely screen premenopausal women for SCC using validated self-report tools. Cognitive complaints should never be reflexively attributed to anxiety or stress without thorough hormonal and cognitive evaluation. Psychoeducation regarding the neurobiological basis of SCC should be a standard component of well-woman visits for women aged 35 and older.

Research priorities

Longitudinal prospective studies enrolling women from the premenopausal stage are urgently needed to map the trajectory of SCC from hormonal transition to potential objective decline. Development and validation of SCC-specific assessment tools for this demographic must be prioritised. The DTI-ALPS index and resting-state functional connectivity neuroimaging hold promise as objective biomarkers correlating with subjective experience.

Workplace policy

Organisations should implement menopause-inclusive workplace policies that acknowledge cognitive as well as physical symptoms. Flexible scheduling, reduced cognitive load during symptomatic periods, and manager education programmes can substantially mitigate the professional impact of SCC. The recognition that nearly 80% of women surveyed believe clearly defined accommodations would improve productivity underscores the feasibility and value of such policies.

Public health awareness

Public health campaigns should destigmatise cognitive complaints during the menopausal transition, framing them as a biological – not psychological – reality.

Community-based support programmes, peer networks, and digital health resources can bridge the gap between clinical recognition and lived experience.

Hormonal and lifestyle intervention research

The neuroplasticity window of the premenopausal transition represents an underexplored therapeutic opportunity. Research into the timing and impact of menopausal hormone therapy (MHT), cognitive training, physical exercise, sleep optimisation, and dietary intervention on SCC outcomes should be urgently accelerated.

Conclusion

Subjective cognitive complaints in premenopausal women are real, biologically grounded, professionally consequential, and clinically actionable. The pathophysiology is clear: fluctuating estradiol disrupts neuroplasticity, destabilises synaptic architecture, impairs neurotransmitter balance, compromises brain energy metabolism, and alters functional connectivity in networks governing memory, attention, and executive function. The occupational toll is quantifiable and alarming. The personal and social burden, though harder to measure, is equally profound. We urge the scientific and clinical community to move beyond the false binary of 'subjective versus objective' cognitive impairment and embrace SCC as a legitimate, measurable, and treatable condition in its own right. Women in the premenopausal transition deserve evidence-based validation of their experience, targeted clinical assessment, and, where appropriate, prompt, effective intervention. The cost of continued inaction is measured not only in healthcare terms, but in lost potential, professional opportunity, and quality of life across the lifespan.

Abdul Rehman Bajwa*

Wah Medical College, NUMS, Pakistan

***Correspondence**
Dr. Abdul Rehman Bajwa,
E-mail: abdulrehmanbajwaa786@gmail.com

REFERENCES

1. Almey A, Filardo EJ, Milner TA, Brake WG. Estrogen receptors are found in glia and at extranuclear neuronal sites in the dorsal striatum of female rats: evidence for cholinergic but not dopaminergic colocalization. Endocrinology. 2012;153(11):5373-83.
2. Bendis PC, Zimmerman S, Onisiforou A, Zanos P, Georgiou P. The impact of estradiol on serotonin, glutamate, and dopamine systems. Front Neurosci. 2024;18:1348551.
3. Crockford JFE, Guan DX, Einstein G, Smith EE, Ismail Z. Cognitive and behavioral decline predicted by perimenopausal symptoms: A CAN-PROTECT study. Alzheimers Dement. 2025;20(Suppl 3):e092052.

4. Devi G, Hahn K, Massimi S, Zhivotovskaya E. Prevalence of memory loss complaints and other symptoms associated with the menopause transition: a community survey. Gender Med. 2005;2(4):255-64.
5. Hone Health Survey. Survey: Menopause symptoms harm women's productivity. 2025. Available at: https://honehealth.com/edge/productivity-lost-to-menopause-symptoms/?srsltid=AfmBOooJtac_B4WMjfH87b4kS71sj_mlIpm3HrilSANd2hgdKW2zHW8V. Accessed on 12 March 2026.
6. Jessen F, Amariglio RE, Van Boxtel M, Breteler M, Ceccaldi M, Chételat G, et al. A conceptual framework for research on subjective cognitive decline in preclinical Alzheimer's disease. Alzheimer's Dementia. 2014;10(6):844-52.
7. Joinmidi. Menopause goes to work. 2025. Available at: https://www.joinmidi.com/post/menopause-goes-to-work. Accessed on 12 March 2026.
8. Korn Ferry/Vira Health. Viewpoint: Understanding the impact of menopause in the workplace. 2023. Available at: https://www.kornferry.com/institute/korn-ferry-and-vira-health-survey-findings. Accessed on 12 March 2026.
9. Lejri I, Grimm A, Eckert A. Mitochondria, estrogen and female brain aging. Front Aging Neurosci. 2018;10:124.
10. Maki PM, Jaff NG. Brain fog in menopause: a health-care professional's guide. Climacteric. 2022;25(6):570-8.
11. Maki PM, Jaff NG. Menopause and brain fog: how to counsel and treat midlife women. Menopause. 2024;31(7):647-9.
12. Maki PM, Springer G, Anastos K, Gustafson DR, Weber K, Vance D, et al. Cognitive changes during the menopausal transition: a longitudinal study in women with and without HIV. Menopause. 2021;28(4):360-8.
13. Menopause Society. How menopause restructures a woman's brain. Press release, Orlando. 2025. Available at: https://menopause.org/press-releases/how-menopause-restructures-a-womans-brain. Accessed on 12 March 2026.
14. Ramachandra A, Thomas EHX, Vincent AJ, Hickey M, Warren N, Kulkarni J, et al. Subjective cognitive changes following premenopausal risk-reducing bilateral salpingo-oophorectomy. Climacteric. 2023;26(6):625-31.
15. Reisberg B, Shulman MB, Torossian C, Leng L, Zhu W. Outcome over seven years of healthy adults with and without subjective cognitive impairment. Alzheimer's Dementia. 2010;6(1):11-24.
16. Safwan N, Saadedine M, Shufelt CL, Kapoor E, Kling JM, Chaudhry R, et al. Menopause in the workplace: challenges, impact, and next steps. Maturitas. 2024;185:107983.
17. Saykin AJ, Wishart HA, Rabin LA, Santulli RB, Flashman LA, West JD, et al. Older adults with cognitive complaints show brain atrophy similar to that of amnestic MCI. Neurology. 2006;67(5):834-42.
18. Than S, Moran C, Beare R, Vincent A, Lane E, Collyer TA, et al. Cognitive trajectories during the menopausal transition. Front Dementia. 2023;2:1098693.
19. Vega JN, Zurkovsky L, Albert K, Melo A, Boyd B, Dumas J, et al. Altered brain connectivity in early postmenopausal women with subjective cognitive impairment. Front Neurosci. 2016;10:433.
20. Mervosh N, Devi G. Estrogen, menopause, and Alzheimer's disease: understanding the link to cognitive decline in women. Front Mol Biosci. 2025;12:1634302.
21. Weber MT, Mapstone M. Memory complaints and memory performance in the menopausal transition. Menopause. 2009;16(4):694-700.
22. Weber MT, Mapstone M, Staskiewicz J, Maki PM. Reconciling subjective memory complaints with objective memory performance. Menopause. 2012;19(7):735-41.
23. World Health Organization. Menopause. WHO Fact Sheet. 2024. Available at: https://www.who.int/news-room/fact-sheets/detail/menopause. Accessed on 12 March 2026.
24. Zhu C, Arunogiri S, Thomas EHX, Li Q, Kulkarni J, Gurvich C. The development and evaluation of a fact sheet resource for women managing menopausal-related cognitive complaints. Menopause. 2024;31(11):987-95.

Cite this article as: Bajwa AR. Subjective cognitive complaints in premenopausal women: an overlooked clinical reality demanding recognition. Int J Reprod Contracept Obstet Gynecol 2026;15:3380-4.