

A comparative study of cognitive functioning in menopausal and non-menopausal females



Elka Stefanova¹, Jovana Dinić¹, Predrag Aleksić², Una Lazić², Gorana Mandić Stojmenović^{1,2}, Tanja Stojković^{1,2}

¹University of Belgrade, Faculty of Medicine; ²Neurology Clinic, UKCSerbia

Menopause is associated with increased subjective cognitive complaints, even in the absence of objective cognitive impairment. These findings suggest that perceived cognitive difficulties may reflect factors other than measurable neurological decline

INTRODUCTION

The cognitive effects of menopause are not fully understood, and many women report cognitive changes during the menopausal transition. Whether these subjective complaints reflect objective cognitive decline remains unclear. This study aimed to compare cognitive performance and subjective cognitive complaints in healthy menopausal and non-menopausal women

METHODS

We recruited 114 healthy female volunteers aged 30-65 years from among employees of the University of Belgrade. All participants underwent a comprehensive assessment with detailed neuropsychological test battery, and the Cognitive Reserve Index Questionnaire. Subjective cognitive complaints were evaluated using the MyCog scale. Women with neurological or psychiatric disorders and those using hormonal therapy were excluded.

Women in the menopausal group were older than those in the premenopausal group (54.9 ± 4.8 vs. 43.1 ± 6.9 years), while years of education were comparable (18.6 ± 4.2 vs. 19.3 ± 4.1). The menopausal group reported significantly more subjective cognitive complaints overall (MyCog median: 7.0 vs. 3.5; $p = 0.005$), particularly in the memory domain (median: 3.0 vs. 1.0; $p = 0.038$). Although menopausal women had lower raw scores on the Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), and Rey–Osterrieth Complex Figure Test (ROCF) memory score, these differences were no longer significant after adjustment for age.

	Menopausal	Non-menopausal	p
Memory			
GB Delayed free	13.0 (3.0)*	13.00(3.0)*	0.45
GB Recognition	16.0(0.0)*	16.0 (0.0)*	0.97
DMS Percent correct	90.6 (4.9)	90.0(6.9)*	0.93
SRM Percent correct	80.0(10.0)*	80.0(18.7)*	0.49
PRM Percent correct	87.1 (8.1)	91.7(12.5)*	0.10
ROCF 40min	18.3 (4.8)	20.6 (4,9)	0.008

	Menopausal	Non-menopausal	p
Working Memory			
RTI simple accuracy	9.0(1.0)*	9.0 (1.0)*	0.15
RTI 5 choice accuracy	8.0(0.0)*	8.0(0.0)*	0.52
RVP A'	0.9(0.7)*	0.9(0.7)*	0.45
RVP prob	0.7(0.2)*	0.6(0.2)	0.66

RESULTS

	Menopausal	Non-menopausal	p
n	48	66	
Age (y)	54.9(4.8)	43.1(6.9)	0.00
Education (y)	20.0(6.0)*	20.0(7.0)*	0.21
Weight kg	70.0(14.0)*	65.0(15.50)*	0.21
BMI	24.7(5.0)*	22.8(4.07)*	0.07
HADS anxiety total	7.5(2.6)	7.0(3.00)*	0.93
HADS depression total	5.7(2.5)	4.9(2.67)	0.08
Apathy scale total	9.5(4.8)	7.5(5.00)*	0.07
MyCog First part	1.0(2.0)*	1.0(2.00)*	0.02
MyCog memory subscore	3.0(5.0)*	1.5(4.00)*	0.03
MyCog language subscore	2.0(3.0)*	1.00(3.00)*	0.002
MyCog executive subscore	1.0(3.0)*	0.0(2.00)*	0.008
MyCog positive answers	7.0(8.0)*	4.0(7.00)*	0.005

The values are shown as mean(SD) and median(interquartile range) Legend (in alphabetical order): BDAE - Complex Ideational Material; BMI - Body-mass index; BNT - Boston Naming Test; DMS - Delayed match to sample; CANTAB; GB - Grober Buschke Free and Cued Selective Reminding Test; HAD-5 - Hospital Anxiety and Depression scale; IED - Intra/Extra Dimensional Shift test; CANTAB; MMSE - Mini Mental State Examination Test; MoCA - Montreal Cognitive Assessment; MOT - Motor Screening Task; CANTAB; MTS - Match to sample visual search; CANTAB; My Cog - The Subjective Cognitive Decline Questionnaire (SCD-Q, My Cog part); PRM - Pattern Recognition Memory; CANTAB; ROCFT - Rey-Osterrieth complex figure test; RTI - Reaction time; CANTAB; RVP - Rapid Visual Processing; CANTAB; SOC - The Stockings of Cambridge, computerized version of the Tower of London task; CANTAB; SRM - Spatial Recognition Memory; CANTAB.

	Menopausal	Non-menopausal	p
Executive functions			
Phonemic fluency	38.7(3.7)	39.5(3.8)	0.80
Category fluency	23.9(5.2)	24.0 (8.0)*	0.96
SOC Problems solve in minimum moves	7.4 (2.2)	7.4(1. 9)	0.82
IED Total errors adjusted	17.0(43.0)*	16.0(44.0)*	0.34
IED stages completed	9.0 (2.0)*	9.0(2.0)*	0.78

	Menopausal	Non-menopausal	p
Visuospatial function			
MTS Percent correct	97.9(4.2)*	97.2(4.1)*	0.54
ROCF Copy	30.0(3.0)*	30.0(4.0)*	0.37
Language			
BNT total	15.0(0.00)*	15.0(0.0)*	0.40
BDAE	12.0(1.0)*	12.0(0.0)*	0.28

CONCLUSIONS

Menopause was associated with increased subjective cognitive complaints, but not with objective cognitive impairment after adjustment for age.

These findings suggest that perceived cognitive difficulties during menopause may reflect factors other than measurable cognitive decline.

Longitudinal studies are needed to clarify the mechanisms underlying subjective cognitive complaints during the menopausal transition.

CONTACT

steela21@gmail.com

