

# RELATIONSHIP BETWEEN STRUCTURAL BRAIN CHANGES AND COGNITIVE PERFORMANCE IN MENOPAUSE WOMEN: A SYSTEMATIC REVIEW

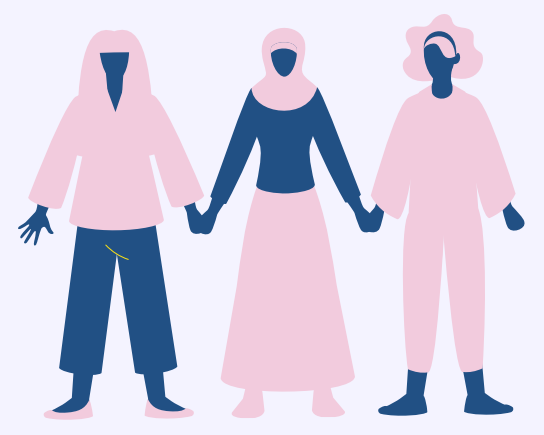
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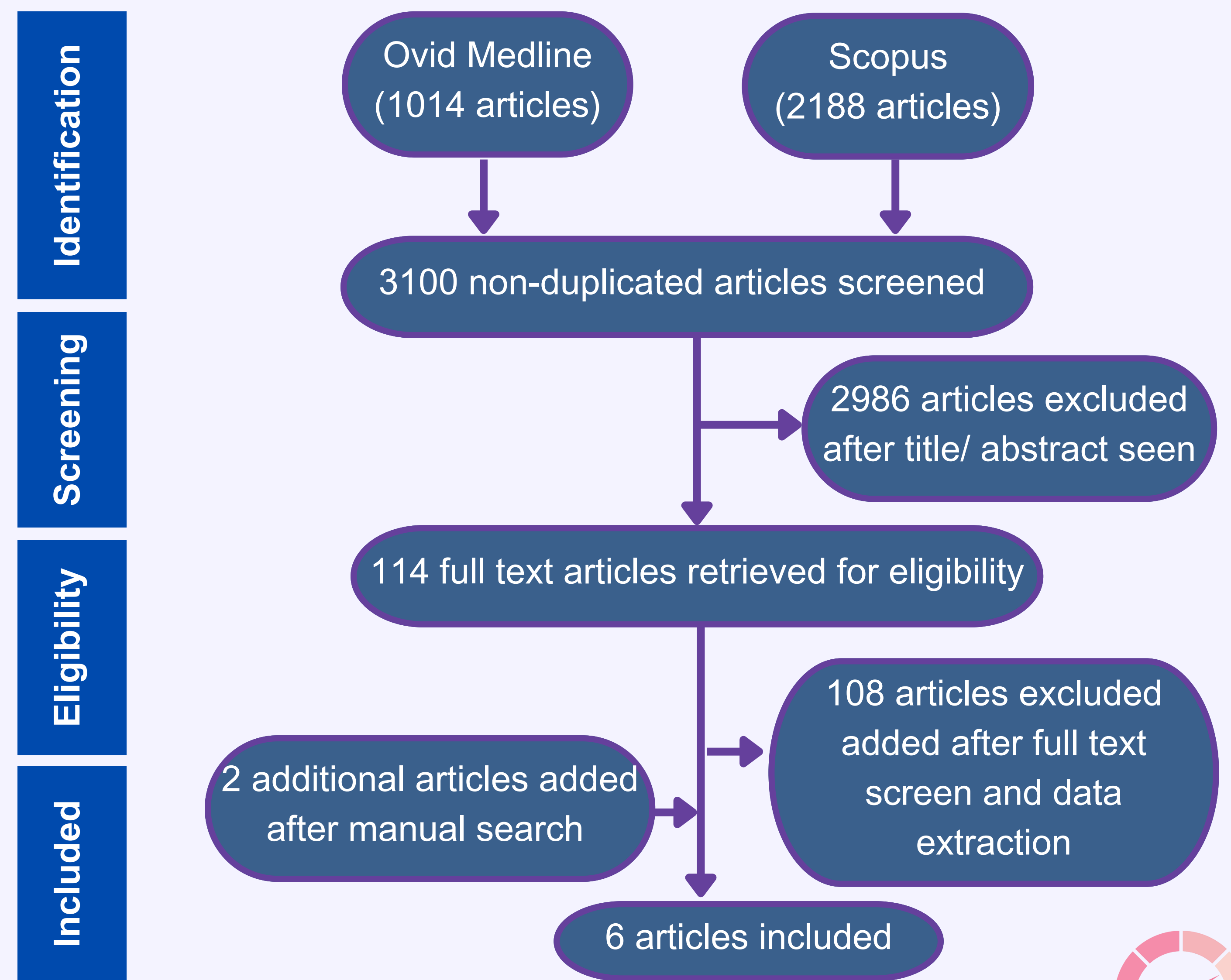


## ★ BACKGROUND ★

Numerous studies have shown the adverse impact of menopause on cognitive function potentially driven by the declining estrogen that also impact brain structure. Although there is evidence of structural brain changes in menopause, the relationship between these changes and cognitive performance were lacking. This structured review aims to summarize how structural brain changes in menopausal women correlate with measurable differences in cognitive performance systematically.



## ★ METHOD ★



## ★ RESULTS ★

| Study                    | Neuropsychological tests   | Relationship between cognition & brain volume in Post-M   |
|--------------------------|--|---|
| den Heijer et al. (2003) | Delayed recall   | Post-M women had ↑ <b>delayed recall scores</b> but ↓ <b>hippocampal volume</b>   |
| Mosconi et al. (2017)    | Paired associates delayed recall, Paragraph delayed recall, Designs score, Object naming | <b>Cognitive function unaffected</b> in Post-M, but ↓ <b>GM volume</b> in the frontal, posterior cingulate, precuneus, temporal, & parietal regions |
| Mosconi et al. (2018)    | Paragraph recall, Block design   | Post-M had ↓ <b>paragraph recall scores and block design tasks</b> with ↓ <b>hippocampal volume</b>   |
| Rahman et al. (2020)     | Paragraph immediate and delayed recall, Designs score, Object naming, Vocabulary score   | ↓ <b>Paired associates delayed recall scores</b> with ↓ <b>GM and WM volumes</b>  |
| Schelbaum et al. (2021)  | RAVLT, WMS-LM delayed recall test, Trail Making Test Part B, Object naming               | <b>Cognitive function unaffected</b> but ↓ <b>GM volume in the medial temporal lobe</b>   |
| Zhang et al. (2021)      | Two-back task, Stroop test   | ↓ <b>Reaction time and accuracy rate</b> in both tests with ↓ <b>amygdalar volume</b>   |

GM= Grey matter, Post-M= Post-menopausal women, RAVLT=Rey auditory verbal learning test, WM= White matter, WMS-LM=Wechsler Memory Scale logical memory, ↑ = increased, ↓ = decreased

## ★ CONCLUSION ★

Structural brain changes in postmenopausal women are evident but do not always directly correlate with cognitive decline. While brain structural changes appear to be more sensitive to the hormonal milieu, cognitive deficits may manifest later or be mitigated by cognitive reserve. Further research is needed to better understand these relationships and their implications for cognitive health during menopause.

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