

VISCERAL ADIPOSITY AND COGNITIVE DECLINE: A LITERATURE REVIEW ON NEUROINFLAMMATORY MECHANISMS AND BIOMARKERS AND NEURODEGENERATION

Jordana Yarid Mansor

Laura Fernandes Okada Pontelli Maria Eduarda Correia Cortizo Antônio Fachini Sanches Fernandes-
Universidade de Marília (Unimar); Marília; São Paulo

RESUMO

ABSTRACT Introduction: Obesity is a growing pandemic associated with neurodegenerative diseases. Recent evidence indicates that the distribution of body fat, specifically visceral adiposity, is more strongly correlated with cognitive impairment than total adiposity alone. Understanding the inflammatory and metabolic mechanisms of this relationship is crucial for preventive strategies. Objectives: To investigate the association between visceral obesity and cognitive impairment, highlighting the neurobiological mechanisms and biomarkers involved in neurodegeneration. Methods: Literature review conducted in April 2026 in the PubMed, LILACS, and CAPES Periodicals Portal databases. The search strategy included the descriptors "Abdominal Obesity," "Cognitive Dysfunction," and "Neuroinflammation," focusing on meta-analyses, cohort studies, and clinical trials published between 2021 and 2026. Results: Central obesity, measured by waist circumference (WC), was associated with a 10% increased risk of dementia (HR = 1.10; 95% CI: 1.05-1.15), a risk that increases to 13% in individuals over 65 years of age. Indicators such as waist-to-hip ratio (WHR) and waist-to-height ratio (WHtR) have proven to be more consistent predictors of cognitive performance than BMI. Meta-analyses have revealed that elevated BMI correlates negatively with cerebral blood flow ($\beta = -0.31$), resulting in global and regional reductions (hippocampus, thalamus, and frontal/temporal lobes). Mechanistically, visceral obesity promotes neuroinflammation, hyperinsulinemia, and accumulation of β -amyloid peptide and Tau protein. Additionally, the comorbidity between abdominal obesity and depression exerts additive effects, significantly worsening the decline in executive function in adults over 45 years of age. Conclusion: Visceral adiposity negatively impacts cognitive function through hemodynamic and metabolic changes in the brain. The superiority of WC and WHR over BMI as risk predictors highlights the need for multidimensional anthropometric assessments in clinical practice. Strategies aimed at reducing abdominal fat and controlling neuroinflammation are essential to mitigate the progression of pathologies such as Alzheimer's Disease.

Palavras-chave: Obesity; Cognitive Dysfunction; Waist Circumference; Executive Function; Inflammation.