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A bibliometric and knowledge map examination of transcranial alternating current stimulation for older persons with cognitive impairment

Abstract:

Introduction: As the population ages, cognitive impairment leading to dementia and related disorders presents an increasingly significant societal burden. Transcranial Alternating Current Stimulation (tACS) emerges as a potential noninvasive treatment, yet remains an area of ongoing research.

Methods: Using the Science Citation Index Expanded (SCI-E) within the Web of Science Core Collection database (WOS), we identified 144 relevant articles spanning from 1965 to December 1st, 2023.

Results: Analyzing these papers with tools like 6.2.R5Citespace and 1.6.20VOS viewer revealed gamma frequency as the predominant stimulus (32), followed by theta (19), alpha (11), delta (2), beta (3), and others (32).

Conclusion: This topic was relatively novel, showing an upward trend, albeit with gaps in some countries. Significant contributions were observed, particularly from authors in the USA, Germany, and Italy. Brain connectivity and oscillation stood out as the primary research subjects, with electroencephalography (EEG) being the most widely used tool to detect underlying mechanisms. Our findings suggest promising applications of tACS, particularly 40HZ-gamma, in cognitive impairment among older adults, highlighting the need for further investigation using multimodal cognitive assessment tools and rigorous clinical research.

Biography

Fu Yutong is studying for PhD in physicaltherapy at the Universiti Kebangsaan Malaysia. She completed her master degree at the age of 24 years from Kunming Medical University. She is a youth committee member of the Chinese Rehabilitation Medicine. She won the Yunnan Provincial Health Science and Technology Progress Award, spoke at many domestic and foreign rehabilitation conferences, and published many articles on physical therapy.