

Neuropsychiatric Manifestations in HIV-associated Neurocognitive Disorder: A Systematic Review

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Introduction

Patients with HIV-associated neurocognitive disorder (HAND) commonly present with neuropsychiatric symptoms. The prevalence of neuropsychiatric symptoms ranges from 30% to 70%. To address these issues, a panel refined the diagnostic classification of HAND and provided three distinct conditions: a) Asymptomatic Neurocognitive Impairment (ANI), b) HIV-Associated Mild Neurocognitive Impairment (MND), and c) HIV-Associated Dementia (HAD).²

We aim to review the neuropsychiatric manifestations, psychiatric comorbidities, and sociodemographic risk factors in individuals affected with HAND in the last 5 years. Assessing neuropsychiatric comorbidities in HAND is crucial for tailored interventions, enhancing patient care, and improving overall quality of life.

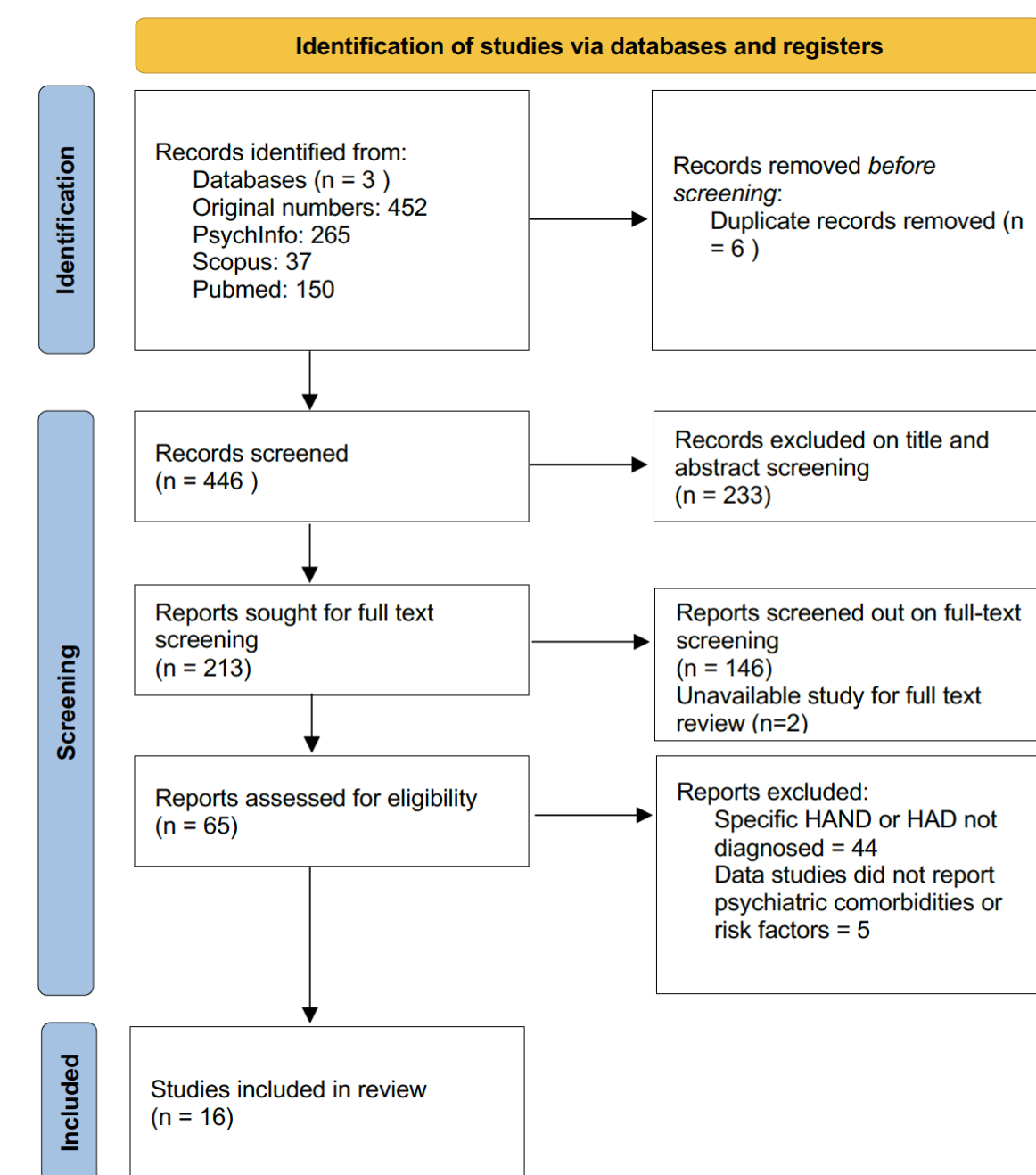
Methods

We performed a systematic review per PRISMA guidelines. The literature search was done on three databases, PubMed/Medline, Scopus, and PsychInfo, using the keywords “HIV-associated neurocognitive disorder” OR “HIV-associated dementia” from January 2018 to March 2023. The filters used to narrow our search results were a) species as Humans, b) language as English, and c) age group as Adult: 18+ years. We included original articles only. Animal studies, studies not published in English, reviews, and meta-analyses were excluded. Studies without a formal diagnosis of HAND, HAD, Neurocognitive Impairment (NCI) or ANI were excluded from the final review.

Results

Our initial search yielded a total of 452 articles: 265 articles from PsychInfo, 37 from Scopus, and 150 from PubMed. After removing duplicates, abstract, full-text screening, and applying inclusion/exclusion criteria, we added 16 studies to our review. The total number of participants is 2785 who have a diagnosis of HAND, HAD, NCI, or ANI.

Tables and Figures



PRISMA 2020 Flow Chart³

- Our results demonstrate depression, anxiety, and substance dependence are most widely associated with HAND. A higher prevalence of depression was observed in females.
- Our study underscores the complexity of psychiatric conditions co-occurring with HIV-related neurocognitive disorders.

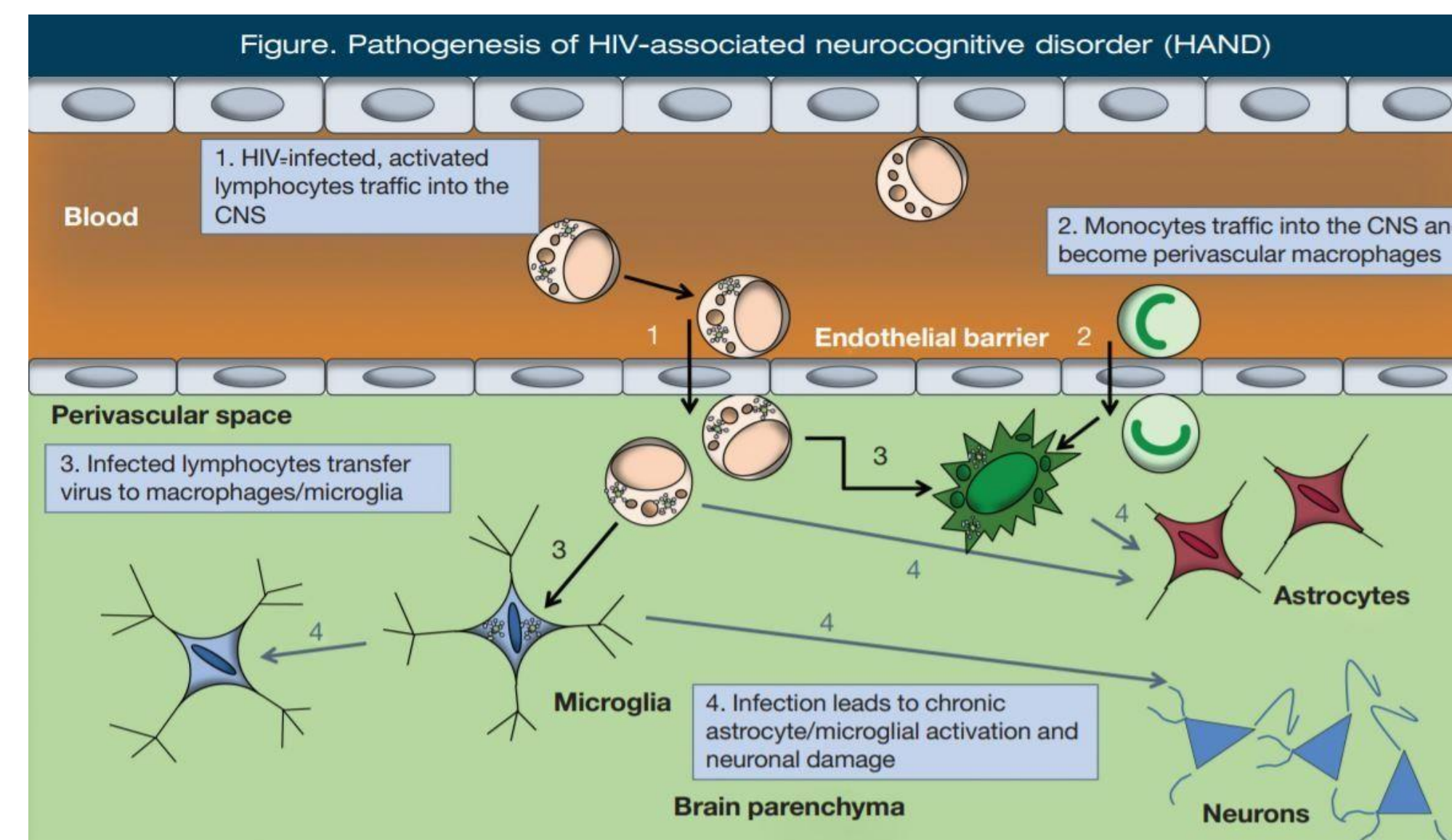
- In this study, patients aged 18 to 75 years were analyzed, with an average age of 46.5 years.
- A significant connection between depression and HIV-associated neurocognitive disorders (HAND) was observed, particularly in severe cases (63% in HAD+MND compared to 47% in ANI).
- Individuals with HAND displayed various psychiatric comorbidities, including depressive symptoms, anxiety, and substance dependence. Alcohol use was prevalent, with 71.6% having a history of substance use, and 54.4% reporting alcohol abuse.
- Additionally, neurocognitive impairment in HAND patients was evident, notably affecting delayed recall, executive function, motor skills, speed of information processing, verbal fluency, attention/working memory, and learning abilities.
- Neuropsychiatric Inventory (NPI) scores were notably higher in HAND patients, particularly those with functional impairment, emphasizing the substantial impact of neurocognitive disorders in HIV on psychiatric symptoms.

Discussion and Future Directions:

Neuropsychiatric symptoms of HAND are likely related to chronic inflammation and damage to the central nervous system caused by HIV infection. The hypothesized pathophysiology can be categorized into three stages: a) HIV entry into CNS, B) immune cell-mediated inflammation, and c) glutamate dysregulation leading to neuronal loss.¹

References

1. Gonzalez-Scarano F, Kolson DL. HIV Associated Neurocognitive Disorder After the Start of Combination Retroviral Therapy. *Psychiatric Times*. 2021. 36(9).
2. Saylor D, Dickens AM, Sacktor N, et al. HIV-associated neurocognitive disorder--pathogenesis and prospects for treatment. *Nature Reviews. Neurology*, 2016. 12(4), 234–248.
3. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71
4. Namagga JK, Rukundo GZ, Niyonzima V, Voss J. Depression and HIV associated neurocognitive disorders among HIV infected adults in rural southwestern Uganda: a cross-sectional quantitative study. *BMC Psychiatry*. 2021;21(1):350. Published 2021 Jul 12. doi:10.1186/s12888-021-03316-w



Pathophysiology of HAND.¹ (1) and (2) demonstrate HIV entry into the CNS. (3) demonstrates immune cell-mediated neuroinflammation. (4) demonstrates glutamate dysregulation and neuronal cell loss.

