

Invisible in the data: transgender populations in Alzheimer's and dementia research

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Abstract

Alzheimer's disease and related dementias (ADRD) are widely studied conditions, yet the populations represented in dementia research do not always reflect the diversity of individuals who age with these disorders. Transgender and gender-diverse populations remain largely absent from many epidemiological datasets and longitudinal cohort studies that inform current models of cognitive aging. Historically, health registries and research databases recorded sex as a binary variable, leaving little room to understand how gender diversity intersects with brain health and neurodegeneration. This absence has limited the ability of researchers to explore whether life experiences unique to transgender individuals influence cognitive trajectories later in life. Emerging research suggests that transgender adults may experience a higher prevalence of several modifiable dementia risk factors, including cardiovascular disease, chronic stress, depression, and barriers to healthcare access. These factors are well established contributors to neurodegenerative disease and cognitive decline across populations. Importantly, current evidence does not suggest that gender identity itself confers an inherent biological predisposition to Alzheimer's disease. Instead, the disparities observed may reflect the cumulative influence of social determinants of health and lifelong stress exposures that shape brain resilience. The concept of minority stress provides a useful lens through which these patterns can be understood. Persistent exposure to discrimination, stigma, and structural barriers may produce long-term physiological stress responses that interact with metabolic and cardiovascular pathways known to affect cognitive health. Over time, these processes may contribute to vulnerability in neural systems responsible for memory and executive function. Despite growing awareness, the intersection of transgender health and neurodegeneration remains underexplored. Expanding dementia research to include gender identity variables, inclusive epidemiological frameworks, and culturally competent healthcare perspectives may reveal previously unrecognized pathways influencing brain aging. Addressing these gaps will not only improve understanding of cognitive health within transgender populations but also enrich the broader field of dementia research by highlighting how social experience shapes neurological outcomes.

Keywords: Alzheimer's disease, Dementia, Transgender health, Cognitive aging, Minority stress, Neuroepidemiology

Introduction

The modern study of Alzheimer's disease relies heavily on population-level data. Large cohorts, national registries, and longitudinal aging studies have provided invaluable insights into how dementia develops and progresses. Yet within these datasets, certain groups remain quietly absent. Transgender and gender-diverse individuals rarely appear as identifiable populations in dementia research, not because they are unaffected by neurodegenerative disease, but because the systems that collect health data have historically not recorded gender diversity [1]. This absence is subtle but meaningful. When a population is not visible in research data, its health trajectories remain largely unexplored. As a result, the scientific narrative of cognitive aging may unintentionally overlook experiences that shape brain health across the lifespan [2].

Emerging Signals

In recent years, a small but growing body of research has begun to examine dementia risk within transgender populations. Analyses of health records and behavioral risk datasets suggest that transgender adults may experience higher prevalence of several modifiable risk factors associated with Alzheimer's disease and related dementias [3]. Cardiovascular disease, depression, chronic psychosocial stress, and barriers to preventive healthcare appear more frequently within transgender communities. These factors are well known contributors to cognitive decline and neurodegeneration in the general population [3]. At present, the available evidence indicates that the biological mechanisms underlying Alzheimer's disease remain consistent across populations. Amyloid accumulation, tau pathology, and synaptic degeneration follow established pathways regardless of gender identity [4].

Life Stress

If the neuropathology is shared, the question becomes one of lived experience. The concept of minority stress offers a framework for understanding how long-term social conditions may influence neurological health. Transgender individuals often navigate environments shaped by stigma, discrimination, and limited access to affirming healthcare services [5]. Exposure to chronic social stress can have measurable physiological consequences. Persistent activation of stress pathways, including dysregulation of cortisol and inflammatory signaling, has been linked to structural and functional changes in brain regions central to memory and cognition [5]. Over the course of decades, these physiological responses may interact with metabolic and cardiovascular risk factors to influence susceptibility to neurodegenerative disease [4].

Care Barriers

Healthcare access also plays a significant role in shaping long-term brain health. Studies have documented that transgender individuals frequently encounter barriers when seeking medical care, ranging from lack of provider knowledge to negative clinical experiences [3]. When preventive care is delayed or avoided, conditions such as hypertension, diabetes, and depression may remain inadequately treated. Each of these conditions is independently associated with increased risk of cognitive decline [2]. Reports from older transgender adults suggest that experiences of discrimination in healthcare settings are associated with greater levels of subjective cognitive decline, a symptom that often precedes measurable impairment in dementia [7].

Hormone Context

Public discussions about transgender health frequently center on gender-affirming hormone therapy. However, current research has not demonstrated a clear link between hormone therapy and increased dementia risk [3]. The limited data available suggest that broader determinants such as cardiovascular health, mental health, and access to care likely play a more influential role in shaping cognitive outcomes [3]. Nevertheless, the long-term neurological effects of gender-affirming therapies remain an important area for future investigation, particularly as increasing numbers of individuals receive such treatments earlier in life [4].

Knowledge Gaps

Despite growing interest in health equity, the intersection between

transgender health and dementia remains underrepresented in scientific literature. Few longitudinal studies have been designed to examine cognitive aging in transgender populations, and many national datasets still lack standardized measures of gender identity [2]. Recognizing this gap, international health organizations have emphasized the importance of inclusive health data systems capable of capturing diverse gender identities [6]. Without such data, researchers cannot accurately estimate dementia prevalence or identify protective factors within gender-diverse communities [2].

Future Work

Future research should aim to integrate gender identity variables into large epidemiological studies and national health registries. This step alone would allow researchers to observe cognitive aging patterns across previously overlooked populations [2]. Longitudinal studies focusing specifically on transgender aging may provide valuable insight into how psychosocial stress, endocrine factors, and cardiovascular health interact to influence neurodegenerative processes [3]. Collaborative research bridging neuroscience, endocrinology, and social epidemiology may also reveal how environmental experiences shape the biological pathways of dementia [4]. Importantly, expanding this area of research has the potential to deepen our understanding of brain aging more broadly. Studying how social conditions affect neurological resilience could offer insights relevant far beyond any single population.

Final Reflection

The story of Alzheimer's disease is still being written. Each new dataset adds detail to our understanding of how memory fades and why some brains prove more resilient than others. But for that story to be complete, the populations represented in research must reflect the diversity of the world in which aging occurs. Transgender individuals have long lived at the margins of health research. Bringing their experiences into the study of cognitive aging does more than correct an omission. It opens a new window into how biology, society, and lived experience together shape the aging brain.

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