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Sleep Medicine's Diagnostic Equity Problem May Widen Dementia Disparities

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The communities carrying the greatest burden of poor sleep are often the least likely to receive a diagnosis or treatment. As research on sleep and cognitive health develops, that gap deserves greater attention as a potential contributor to wider brain-health inequities.

The people most likely to suffer from sleep disorders are often the least likely to be evaluated, formally diagnosed or connected to sustained treatment.

This paradox has long posed a challenge for sleep medicine. It is becoming more consequential as research increasingly links disorders such as obstructive sleep apnea (OSA) and insomnia to cognitive decline, dementia risk and longterm brain health.

If sleep disorders are emerging as potentially modifiable contributors to cognitive health, then unequal access to diagnosis and treatment may represent more than a sleep-health problem. It may also be a brain-health equity problem.

Who Gets Diagnosed With Sleep Disorders, and Who Does Not?

Population studies in the U.S describe a consistent pattern. Racial and ethnic minority groups and people with lower socioeconomic status experience a disproportionate burden of sleep problems but are less likely to get diagnosed and access care.[1-3]

The picture for insomnia is equally worrisome. A 2025 nationally representative U.S. analysis found that college students from marginalized racial groups who reported insomnia symptoms were significantly less likely to receive a clinical diagnosis compared to White students with identical symptoms.[4]

While the data is strongest there, these dynamics are not unique to the U.S. One systematic review covering thousands of patients across multiple countries concluded that sleep apnea is underdiagnosed and undertreated in ethnic minority populations globally, with ancestry, comorbidities, social determinants, geography and healthcare access all identified as drivers of global inequity in OSA care.[5]

How Diagnosis Is Structurally Obstructed

The reasons for underdiagnosis are not difficult to identify. They are built into how sleep care is organized.

Geography is among the most consequential barriers. Sleep clinics and diagnostic facilities are often concentrated in more affluent areas, leaving rural and lower-income communities (which are already dealing with transportation constraints and irregular work schedules) with fewer options. A 2024 study found significant differences in spatial access to sleep care, with racial and ethnic minority populations in rural areas facing some of the greatest barriers to accessing sleep health services.[6]

Diagnostic access is also shaped by how and where sleep disorders are identified. Referral dependent models that rely on primary care recognition, employer sponsored screening, or out of pocket home testing tend to advantage insured, higher income and majority white populations. Language barriers, medical mistrust, limited paid time off and competing caregiving demands all make it less likely that a patient with chronic insomnia or classic OSA symptoms will navigate the multi step pathway from symptom recognition to polysomnography to durable equipment acquisition and follow up.

Finally, the diagnostic tools themselves introduce bias. Pulse oximetry — the standard technology for measuring oxygen desaturation in sleep studies — is now often established to overestimate oxygen saturation in patients with darker skin pigmentation.[3] This leads to occult hypoxemia and systematically underscored OSA severity during assessment.[7]

All of this occurs in neighborhoods shaped by structural discrimination, redlining, and residential segregation, where the physical environment chronically degrades sleep quality while simultaneously limiting access to care. Disadvantaged neighborhoods typically expose residents to excess noise, light pollution, air particulates and safety-related hypervigilance — a cluster of factors that worsens sleep disruption at the community level.[8] Research also links interpersonal and structural discrimination with poorer sleep quality, more severe insomnia and lower adherence to OSA treatment among ethnic minority adults.[9]

Sleep Disorders and Neurocognitive Risk: Emerging Evidence

The diagnostic gap is becoming more concerning as evidence linking sleep disorders with cognitive health develops.

OSA and sleep-disordered breathing are associated with higher risks of dementia and Alzheimer's disease. OSA specifically is associated with a 33% higher risk of all-cause dementia and a 45% higher risk of Alzheimer's disease.[10]

Some longitudinal studies suggest that more severe OSA, particularly with greater nocturnal oxygen desaturation, predicts faster decline in attention, executive function, and processing speed.[11–13] Because OSA is typically underdiagnosed for years before treatment, the baseline disease severity in the patients studied likely reflects accumulated untreated disease.[14]

The evidence around insomnia points in a similar direction. A meta-analysis comprising more than 9 million individuals across Europe, Asia and North America found insomnia associated with a 36% increased odds of all-cause dementia, a 52% increased odds of Alzheimer's disease, and a 2.1–fold increased odds of vascular dementia.[15] Another recent analysis estimated that about 12.8% of probable dementia cases among U.S. adults aged 65 and older could be attributable to insomnia.[16] The relationship is likely bidirectional. Sleep disruption influences cognitive health, while neurodegenerative changes themselves disturb sleep.

Overall, the current evidence base supports sleep disorders as emerging and potentially modifiable contributors to cognitive decline.

Sleep Disorder Diagnosis Inequities May Widen Dementia Disparities

The diagnostic-equity problem becomes clearer and compounds when it is placed alongside the unequal burden of dementia. Black Americans are about twice as likely as White Americans of the same age to have Alzheimer's disease. Hispanic Americans are about 1.5 times as likely.[17]

The diagnostic failures evident in sleep medicine are also mirrored in neurocognitive medicine.

One study found that 41% of White older adults with probable dementia had a missed or delayed diagnosis in Medicare claims. But that proportion was 46% among Black adults and 54% among Hispanic adults. Delays were also longer among Black and Hispanic patients. When a diagnosis was delayed, the average delay was 34.6 months for Black Americans and 43.8 months for

Hispanic Americans, compared to 31.2 months for White Americans.[18]

These patterns suggest that some populations are overlooked at two critical points in the same life course. The first is when modifiable sleep disorders go unrecognized, and again when signs of cognitive decline are missed or diagnosed late.

This is the double diagnostic gap. Together, these delays significantly narrow the window for intervening on sleep-related risk, potentially modifying brain health deterioration, and initiating dementia care.

Sleep as a Social Determinant Of Brain Health

Public health and dementia-prevention frameworks increasingly recognize sleep as a social determinant of health: a factor shaped by where people live, work, and learn, and by policies that govern housing, labor, and healthcare access.

Poor sleep is more likely when neighborhoods are noisy or unsafe, and when households face crowded living conditions. Research has found that people living in the most economically deprived neighborhoods had a 23% higher likelihood of poor sleep and circadian health compared to those in the least deprived areas.[19]

These same environments also constrain the ability to attend appointments, complete testing and sustain sleep disorder treatment.

This matters for efforts to address cognitive-health disparities. Advising communities to simply "sleep better" or "seek treatment" is unlikely to be enough when the conditions surrounding sleep remain unchanged.

What Can Be Done About the Diagnostic Equity Gap?

The most immediate lever is sleep care integration at the primary care level. In the U.S, the Health Resources and Services Administration (HRSA) already funds Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs) to cater to populations with medical service shortages. FQHCs serve low-income and underserved communities in both urban and rural settings, and RHCs operate exclusively in rural shortage areas. These facilities are not currently required to offer sleep screening or maintain structured sleep referral pathways. The HRSA should mandate this to firmly embed sleep care into the infrastructure that already exists in the underdiagnosed and undertreated communities.

While this intervention does not solve the full scope of the equity gap, it is actionable today.

The longer agenda includes reforming insurance requirements, expanding coverage for sleep diagnostic devices, establishing quality measures that track disparities in diagnosis and treatment, and ensuring that facilities in high-burden communities offer culturally responsive care. Together, these constitute what a serious institutional commitment to sleep health equity would look like.

Why Equity Cannot Wait

The evidence linking sleep and brain health is still developing. What is already clear, however, is that access to sleep care is not distributed equally. The communities carrying the greatest burden of sleep disorders are often the least likely to be diagnosed and treated.

If sleep health is confirmed to be a modifiable factor in cognitive aging, then equity must be embedded from the outset. It needs to shape how new evidence is translated into care, even while the science is still evolving.

The goal is not simply to expand access to sleep testing or treatment. It is to ensure that future breakthroughs in sleep and brain-health research benefit the populations most affected by sleep disorders, rather than further widen the disparities that already exist.[20,21]

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