Dementia and Sleep: Probing the Link

Eshaal Piracha

1st Year MBBS, Islamabad Medical and Dental College, Islamabad, Pakistan

Key points:

- Introduction
- Types of dementia
- Relationship between Dementia and Sleep Cycle
- Treatment

Introduction

Dementia is a collective term for a group of conditions that affect memory, thinking, behavior, and the ability to perform daily activities. It is a progressive disorder that primarily affects older adults, although it is **not** a normal part of aging. As the global population ages, dementia has become a major public health concern, affecting millions .[1]

Types of Dementia

The major types of dementia include Alzheimer's disease, vascular dementia, Lewy body dementia, and frontotemporal dementia.[2]

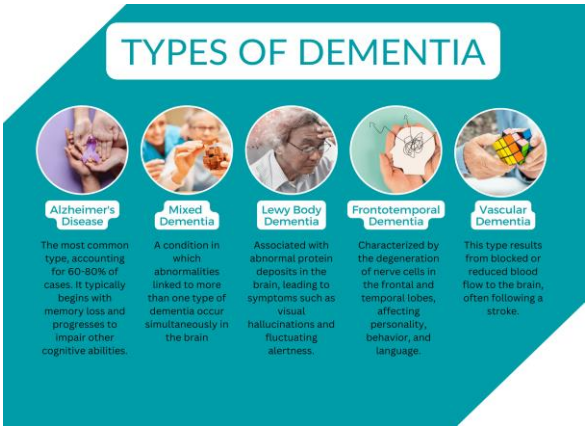


Figure 1*:Types of dementia.*[2]

Sleep Deprivation as a Major Risk Factor

Sleep plays an essential role in maintaining brain health, memory consolidation, and overall well-being. Increasing evidence suggests that sleep disturbances contribute to neurodegeneration and are associated with a higher risk of dementia, including Alzheimer's disease (AD) and vascular cognitive impairment and dementia (VCID). As the global population ages, identifying modifiable risk factors such as poor sleep has become an important strategy for reducing the burden of dementia.[3]

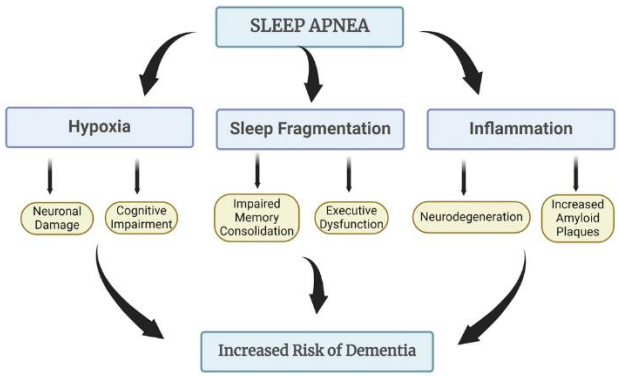


Figure 2*: Risk of dementia*[4]

Research suggests that inadequate sleep is a significant risk factor for dementia. Sleep deprivation promotes the accumulation of amyloid-beta and tau proteins, which are characteristic features of

Alzheimer's disease. During deep slow-wave sleep (SWS), the brain clears metabolic waste through the glymphatic system. Disruption of this sleep stage reduces waste clearance, increases amyloid-beta accumulation, and may increase the risk of developing dementia.[5]

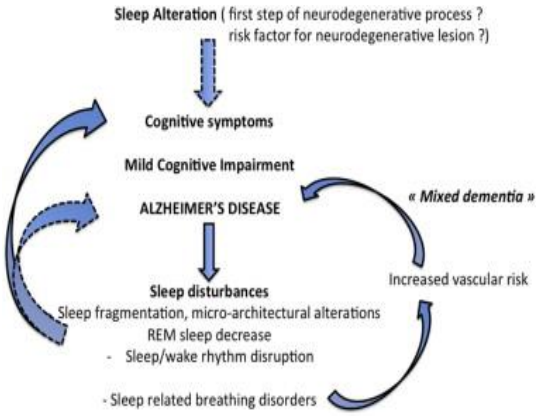


Figure 3*: Effect of sleep disturbances on mind*[6]

Prevention and Treatment of Dementia

Although no proven strategy can completely prevent dementia, addressing modifiable risk factors such as poor sleep, physical inactivity, hypertension, and diabetes may help reduce the risk. Current treatment mainly focuses on managing symptoms and slowing disease progression. Alzheimer's disease is commonly treated with cholinesterase inhibitors, memantine, and anti-amyloid therapies. Cholinesterase inhibitors and memantine may also benefit some patients with Lewy body, Parkinson's disease, vascular, and traumatic brain injury-related dementia.[7]

Treatment of Behavioral and Psychological Symptoms of Dementia

Behavioral and psychological symptoms are primarily managed using non-pharmacological approaches, including identifying underlying causes and providing individualized behavioral interventions. Psychotropic medications are used cautiously because of their limited benefit and increased risk of adverse effects. Ongoing research continues to explore new strategies to improve dementia prevention and treatment.[7]

References

1. National Institute on Aging. *What is dementia? Symptoms, types, and diagnosis* [Internet]. Bethesda (MD): National Institute on Aging; 2024 [cited 2026 Jul 21]. Available from: https://www.nia.nih.gov/health/what-dementia-symptoms-types-and-diagnosis
2. CarePatrol. *Understanding dementia: Exploring types, reducing risks, and a safe environment for dementia loved ones* [Internet]. CarePatrol Western Michigan Capital Region; 2024 [cited 2026 Jul 21]. Available from: https://carepatrol.com/west-michigan-capital-region/
3. Ungvari Z, Fekete M, Lehoczki A, Munkácsy G, Fekete JT, Zábó V, et al. Sleep disorders increase the risk of dementia, Alzheimer's disease, and cognitive decline: A meta-analysis. *Geroscience*. 2025;47(3):4899-4920.
4. Mukherjee U, Sehar U, Brownell M, Reddy PH. Sleep deprivation in dementia comorbidities: Focus on cardiovascular disease, diabetes, anxiety/depression and thyroid disorders. *Aging (Albany NY).* 2024;16(21):13409-13429. doi:10.18632/aging.206157.
5. Himali JJ, Baril AA, Cavuoto MG, Yiallourou S, Wiedner CD, Himali D, et al. Association between slow-wave sleep loss and incident dementia. *JAMA Neurol.* 2023;80(12):1326-1333.
6. Petersen RC. Mild cognitive impairment. *Continuum (Minneap Minn).* 2016;22(2 Dementia):404-418. doi:10.1212/CON.0000000000000313.
7. Reuben DB, Kremen S, Maust DT. Dementia prevention and treatment: A narrative review. *JAMA Intern Med.* 2024;184(5):563-572.
8. Arora S, Santiago JA, Bernstein M, Potashkin JA. Diet and lifestyle impact the development and progression of Alzheimer's dementia. *Front Nutr.* 2023;10:1213223.doi:10.3389/fnut.2023.1213223 .