

# Major Neurocognitive Disorder (Dementia)

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October 1, 2025

## RECOMMENDED CITATION

mohammad looti (2025). *Major Neurocognitive Disorder (Dementia)*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=32057>

## Major Neurocognitive Disorder (Dementia)

**Primary Disciplinary Field(s):** Neurology, Psychiatry, Gerontology, Clinical Psychology

### 1. Core Definition

**Major Neurocognitive Disorder**, widely recognized by its more common term, **dementia**, represents a significant and pervasive decline in various cognitive domains. This decline is severe enough to interfere with independence in everyday activities, a critical distinction from milder forms of cognitive impairment or the normal cognitive changes associated with aging. The affected cognitive functions can include, but are not limited to, memory, speech and language abilities, executive function (such as planning and problem-solving), attention, perceptual-motor skills, and social cognition. The disorder is fundamentally rooted in a breakdown of the central nervous system, leading to structural or functional changes in the brain that progressively impair cognitive processing.

Unlike a singular disease, Major Neurocognitive Disorder is an umbrella term encompassing a variety of underlying neurological diseases and conditions that cause these cognitive deficits. These conditions lead to neurodegeneration, the progressive loss of structure or function of neurons, including neuronal death. The resulting cognitive impairment reflects the specific brain regions affected by the underlying pathology, influencing the particular profile of symptoms an individual experiences. Consequently, an accurate diagnosis requires identifying the specific etiology of the neurocognitive decline to inform prognosis and potential management strategies.

### 2. Etymology and Historical Development

The term "dementia" originates from Latin, where "de" means "away" and "mens" means "mind," literally translating to "away from mind." Historically, this term was used broadly to describe any form of profound mental derangement, often without differentiating between acute, reversible states (like delirium) and chronic, progressive conditions. Early medical texts, such as those by Celsus in the 1st century AD, described conditions aligning with what we now understand as dementia, noting a decline in intellect and memory, particularly in older individuals. However, the understanding remained largely descriptive and lacked a robust etiological framework for centuries.

The modern understanding began to take shape in the 19th and early 20th centuries, with pioneering neurologists and psychiatrists starting to categorize different forms of mental illness. Alois Alzheimer's description of "a peculiar severe disease process of the cerebral cortex" in 1906, which later became known as Alzheimer's disease, marked a significant turning point, linking specific neuropathological findings to clinical symptoms. This era saw the gradual differentiation of dementia from other mental disorders and an increased focus on its organic brain basis.

In contemporary diagnostic frameworks, particularly with the publication of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* by the American Psychiatric Association in 2013, the term "dementia" was officially reclassified as **Major Neurocognitive Disorder**. This change was primarily intended to reduce the stigma associated with the term "dementia," which often carried connotations of madness or irreversible mental decline, and to emphasize the spectrum of cognitive impairments by introducing "Minor Neurocognitive Disorder" for less severe cases. This shift also aimed to better align psychiatric diagnoses with neurological understandings of brain-based disorders, focusing on specific cognitive domains and their decline from a previously attained level of functioning.

### 3. Key Characteristics and Cognitive Domains Affected

The defining characteristic of Major Neurocognitive Disorder is a significant decline in one or more cognitive domains, severe enough to impair daily functioning. This decline represents a marked deterioration from a person's previous level of cognitive performance. The specific symptoms and their presentation can vary widely depending on the underlying cause and the areas of the brain most affected, but they consistently impact an individual's ability to live independently and engage in complex activities.

Key cognitive domains that may be affected include:

**Complex Attention:** Difficulties in sustaining attention, divided attention, selective attention, and processing speed. Individuals may struggle to follow conversations, engage in group activities, or complete tasks requiring focused concentration.

**Executive Function:** Impairments in planning, decision-making, working memory, responding to feedback, mental flexibility, and inhibition. This can manifest as an inability to manage finances, organize daily tasks, or adapt to new situations.

**Learning and Memory:** A hallmark symptom, involving difficulties in acquiring new information, recalling recent events, or even retrieving remote memories. This often affects episodic memory (events) and semantic memory (facts), making it challenging to remember appointments, names, or where items were placed.

**Language:** Problems with expressive language (finding the right words, fluency) or receptive language (understanding speech). This can lead to difficulties in communication, word-finding pauses, or using incorrect words.

**Perceptual-Motor Function:** Deficits in visual perception, visuospatial abilities, and praxis (the ability to perform skilled movements). Individuals might struggle with navigation, recognizing familiar objects or faces, or using tools and utensils appropriately.

**Social Cognition:** Changes in personality, behavior, or social conduct. This can include reduced empathy, disinhibition, apathy, or making inappropriate social judgments, often impacting interpersonal relationships.

Beyond cognitive deficits, individuals with Major Neurocognitive Disorder may also experience significant behavioral and psychological symptoms, often referred to as BPSD (Behavioral and Psychological Symptoms of Dementia). These can include agitation, aggression, delusions, hallucinations, depression, anxiety, apathy, and sleep disturbances. These symptoms are often challenging for caregivers and significantly impact the quality of life for both the person with the disorder and their families. The progressive nature of the disorder means that these symptoms typically worsen over time, leading to increasing dependency and the need for comprehensive care.

## 4. Etiology and Major Subtypes

Major Neurocognitive Disorder is not a disease itself but a syndrome caused by various underlying medical conditions, each with distinct pathological mechanisms. While aging is the most significant risk factor, it is crucial to understand that dementia is not an inevitable part of normal aging. The most common etiologies include neurodegenerative diseases, vascular conditions, and other medical issues that affect brain health.

The primary subtypes of Major Neurocognitive Disorder include:

**Alzheimer's Disease:** This is the most prevalent cause, accounting for 60-80% of cases. It is characterized by the accumulation of amyloid plaques and neurofibrillary tangles in the brain, leading to widespread neuronal damage. Initial symptoms often involve memory loss, followed by difficulties with language, executive function, and visuospatial skills.

**Vascular Dementia:** The second most common type, resulting from damage to brain blood vessels, often due to strokes, ministrokes, or chronic reduced blood flow. Symptoms can vary significantly depending on the location and extent of brain damage, but often include problems with executive function, processing speed, and attention. Its progression is often step-wise, rather than gradually progressive.

**Dementia with Lewy Bodies (DLB):** Characterized by the presence of Lewy bodies (abnormal alpha-synuclein protein deposits) in the brain. Key features include fluctuating cognition, recurrent visual hallucinations, and spontaneous parkinsonism (motor symptoms similar to Parkinson's disease). Sleep disturbances, particularly REM sleep behavior disorder, are also common.

**Frontotemporal Dementia (FTD):** A group of disorders caused by progressive nerve cell loss in the brain's frontal or temporal lobes. FTD typically manifests with prominent changes in personality, behavior, and language (aphasia), rather than memory loss as the initial symptom.

**Other Causes:** Numerous other conditions can lead to Major Neurocognitive Disorder, including Parkinson's disease, Huntington's disease, traumatic brain injury, chronic substance abuse, HIV infection, Creutzfeldt-Jakob disease, and certain nutritional deficiencies (e.g., Vitamin B12 deficiency) or endocrine disorders (e.g., hypothyroidism). Some of these are potentially reversible if diagnosed and treated early.

## 5. Prevalence and Risk Factors

Major Neurocognitive Disorder is a significant public health concern, with its prevalence increasing dramatically with age. While relatively rare in younger adults, it affects approximately 1-2% of individuals by age 65. This figure rises sharply, reaching about 30% of adults by age 80, and continues to escalate in older age groups. The global burden of dementia is substantial and growing, primarily due to an aging global population. The World Health Organization estimates that over 55 million people live with dementia worldwide, with nearly 10 million new cases each year. This makes it one of the leading causes of disability and dependency among older people globally.

Beyond advanced age, several other risk factors contribute to the development of Major Neurocognitive Disorder. Some are non-modifiable, such as genetic predispositions (e.g., APOE e4 allele for Alzheimer's disease), while others are modifiable and represent targets for prevention and intervention. Modifiable risk factors include cardiovascular health issues like hypertension, diabetes, high cholesterol, and obesity, particularly in midlife. Lifestyle factors such as physical inactivity, smoking, excessive alcohol consumption, and an unhealthy diet also increase risk. Furthermore, social and intellectual engagement plays a crucial role; lower levels of education, social isolation, and lack of mental stimulation are associated with an elevated risk of developing cognitive decline. Addressing these modifiable factors through public health initiatives and individual lifestyle choices is increasingly recognized as a vital strategy for potentially slowing the progression or reducing the incidence of dementia.

## 6. Diagnostic Criteria and Assessment

The diagnosis of Major Neurocognitive Disorder relies on a comprehensive assessment that evaluates cognitive function, daily living abilities, and medical history, ruling out other potential causes. According to the DSM-5 criteria, the diagnosis requires evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains (e.g., attention, executive function, learning and memory, language, perceptual-motor, or social cognition). This decline must be supported by concerns from the individual, a knowledgeable informant, or the clinician, and must also be documented by objective standardized neuropsychological testing or another quantified clinical assessment. Crucially, these cognitive deficits must interfere with independence in everyday activities (e.g., managing medications or finances), and they must not occur exclusively in the context of delirium or be better explained by another mental disorder.

The diagnostic process typically involves a multi-faceted approach. A detailed medical history is taken, including a review of symptoms, their onset, progression, and impact on daily life. A thorough physical and neurological examination helps rule out other medical conditions. Cognitive screening tests (e.g., Mini-Mental State Examination, Montreal Cognitive Assessment) provide a quick overview of cognitive function, while comprehensive neuropsychological assessment offers a

more detailed profile of strengths and weaknesses across various cognitive domains. Blood tests are often performed to check for reversible causes such as thyroid dysfunction, vitamin deficiencies, or infections. Neuroimaging techniques, such as MRI or CT scans, are used to identify structural brain changes, like atrophy, strokes, or tumors, and can help differentiate between various types of dementia. In some cases, advanced imaging like PET scans (e.g., amyloid PET, FDG PET) or CSF analysis may be used to detect specific biomarkers associated with diseases like Alzheimer's.

## 7. Differential Diagnosis and Misdiagnosis Pitfalls

One of the critical challenges in diagnosing Major Neurocognitive Disorder lies in differentiating it from other conditions that can mimic its symptoms, particularly in older adults. The source content correctly highlights that this disorder is "frequently misdiagnosed when the actual problems are depression and over-medication which are also prevalent in the aged." This underscores the importance of a rigorous differential diagnosis to ensure appropriate and timely intervention.

**Depression**, often termed "pseudodementia" when presenting with cognitive symptoms, is a common comorbidity and a significant confounder. Depressed individuals may exhibit poor concentration, memory complaints, and reduced executive function, all of which can be mistaken for dementia. However, in depression, cognitive decline often has a more acute onset, patients tend to emphasize their cognitive failures, and mood symptoms are prominent. Effective treatment of depression can often resolve these cognitive symptoms, distinguishing it from true neurocognitive decline.

**Polypharmacy**, or "over-medication," particularly in the elderly who often take multiple medications for various chronic conditions, is another frequent cause of reversible cognitive impairment. Many drugs, especially those with anticholinergic effects, sedatives, opioids, and certain psychiatric medications, can cause confusion, memory problems, and sedation that resemble dementia. A careful review of all medications, including over-the-counter drugs and supplements, is essential. Discontinuation or adjustment of problematic medications can often lead to a significant improvement in cognitive function. Other conditions that must be ruled out include delirium (an acute, fluctuating confusional state), thyroid disorders, vitamin deficiencies (e.g., B12), normal pressure hydrocephalus, and infections, all of which can present with cognitive symptoms that are potentially reversible.

## 8. Management and Therapeutic Approaches

While a definitive cure for most forms of Major Neurocognitive Disorder remains elusive, various management strategies and therapeutic approaches aim to slow progression, alleviate symptoms, and improve the quality of life for affected individuals and their caregivers. The source content

highlights that "Although it is not always possible to ward off, dementia can be slowed by good nutrition, exercise and mental stimulation." These non-pharmacological interventions are indeed cornerstones of dementia care.

**Non-pharmacological interventions** focus on promoting overall brain health and cognitive reserve. A balanced and healthy diet, such as the Mediterranean diet, rich in fruits, vegetables, whole grains, and healthy fats, is encouraged for its anti-inflammatory and antioxidant properties. Regular physical exercise, including aerobic and strength training, has been shown to improve cardiovascular health, reduce the risk of cognitive decline, and potentially enhance cognitive function. Mental stimulation, through activities like reading, puzzles, learning new skills, and social engagement, helps maintain cognitive vitality and may slow the progression of symptoms by building cognitive reserve. Additionally, managing sleep disturbances, stress reduction, and maintaining social connections are crucial components of holistic care.

**Pharmacological treatments** are primarily symptomatic and vary depending on the underlying cause. For Alzheimer's disease, cholinesterase inhibitors (e.g., donepezil, rivastigmine, galantamine) are often prescribed to boost levels of acetylcholine, a neurotransmitter involved in memory and learning. Memantine, an NMDA receptor antagonist, may also be used to regulate glutamate activity. These medications can offer modest, temporary improvements in cognitive symptoms and behavioral control for some individuals. For behavioral and psychological symptoms (BPSD), non-pharmacological approaches are always preferred first. If these are insufficient, judicious use of antipsychotics, antidepressants, or anxiolytics may be considered, but their use requires careful monitoring due to potential side effects, especially in older adults. Emerging treatments, including disease-modifying therapies, are a focus of ongoing research, aiming to target the underlying pathologies of specific dementia types.

## 9. Socio-economic Impact and Care Considerations

The impact of Major Neurocognitive Disorder extends far beyond the individual, creating significant socio-economic challenges for families, healthcare systems, and society at large. The progressive nature of the disorder means that individuals eventually require extensive assistance with activities of daily living, leading to a substantial burden on caregivers. Families often bear the primary responsibility for care, which can result in emotional distress, financial strain, and social isolation for caregivers. The need for long-term care, whether at home or in specialized facilities, incurs considerable costs, placing immense pressure on healthcare budgets globally. As populations continue to age, the prevalence of dementia and its associated care demands are projected to rise, exacerbating these challenges.

Effective care for individuals with Major Neurocognitive Disorder requires a person-centered approach, focusing on maintaining dignity, promoting autonomy where possible, and addressing

individual needs and preferences. This involves creating supportive environments, implementing structured routines, and utilizing communication strategies tailored to the person's cognitive abilities. Care planning must be dynamic, adapting as the disorder progresses and needs change. Support for caregivers is paramount, including education about the disorder, respite care, support groups, and psychological counseling, to mitigate burnout and improve their well-being. Furthermore, public awareness campaigns are essential to combat the stigma associated with dementia, encouraging early diagnosis and fostering a more inclusive and understanding society for those affected by neurocognitive disorders.

## 10. Debates and Future Directions

The field of Major Neurocognitive Disorder is characterized by ongoing research, debates, and evolving understandings. A significant area of discussion revolves around the definition and classification of the disorder, particularly the transition from "dementia" to "Major Neurocognitive Disorder" and the relationship between mild and major neurocognitive impairments. Debates persist regarding the optimal diagnostic criteria, the role of biomarkers in early diagnosis, and the ethical implications of predicting risk before symptoms emerge. The search for effective disease-modifying treatments continues to be a major scientific endeavor, with considerable investment in understanding the complex etiologies of conditions like Alzheimer's disease and developing therapies that can halt or reverse neurodegeneration.

Future directions in research and clinical practice include a stronger emphasis on precision medicine, tailoring interventions based on an individual's specific neuropathology and genetic profile. There is also a growing focus on preventative strategies, identifying and mitigating modifiable risk factors throughout the lifespan to delay onset or reduce incidence. Public health initiatives are increasingly targeting cardiovascular health, promoting active lifestyles, and fostering cognitive engagement to build resilience against cognitive decline. Furthermore, advancements in technology, such as artificial intelligence and wearable devices, are being explored for their potential in early detection, remote monitoring, and personalized care delivery, aiming to revolutionize how we understand, diagnose, and manage Major Neurocognitive Disorder in the coming decades.

## Further Reading

[Major neurocognitive disorder - Wikipedia](#)

[Dementia - Wikipedia](#)

[Neurology - Wikipedia](#)

[Psychiatry - Wikipedia](#)

[Gerontology - Wikipedia](#)

[Clinical Psychology - Wikipedia](#)

[Nervous system - Wikipedia](#)

[Delirium - Wikipedia](#)

[Alzheimer's disease - Wikipedia](#)

[DSM-5 - Wikipedia](#)

[Cognitive domain - Wikipedia](#)

[Vascular dementia - Wikipedia](#)

[Dementia with Lewy bodies - Wikipedia](#)

[Frontotemporal dementia - Wikipedia](#)

[Aging - Wikipedia](#)

[Neuropsychological assessment - Wikipedia](#)

[Differential diagnosis - Wikipedia](#)

[Depression \(mood\) - Wikipedia](#)

[Polypharmacy - Wikipedia](#)

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