



### RESEARCH ARTICLE

## ROLE OF AYURVEDA IN THE MANAGEMENT OF ALZHEIMER'S DISEASE: A COMPREHENSIVE REVIEW

Vd. Bhairavi Chilbule<sup>1</sup> and Arti Firke<sup>2</sup>

1. PG scholar, Department of Swasthavritta and Yoga, PDEA'S College of Ayurveda and Research Centre, Sector No. 25, Pradhikaran, Nigdi, Pune- 411044.

2. Department of Swasthavritta and Yoga, PDEA'S College of Ayurveda and Research Centre, Sector No. 25, Pradhikaran, Nigdi, Pune- 411044.

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#### Abstract

Alzheimer's disease (AD) is the most common form of dementia and represents a major challenge for ageing populations worldwide. The disorder gradually impairs memory, reasoning, learning ability, and daily functioning, significantly affecting both patients and caregivers. Given the limited capacity of current treatments to halt disease progression, there is increasing interest in complementary approaches that support cognitive health and overall well-being. This review explores the Ayurvedic perspective on Alzheimer's disease and evaluates the potential contribution of traditional interventions to its management. Although classical Ayurvedic texts do not describe AD as a separate disease entity, many of its manifestations resemble conditions associated with memory impairment and disturbances of higher mental functions. According to Ayurvedic principles, cognitive decline is linked to age-related physiological changes, imbalance of Vata Dosha, depletion of Majja Dhatu, and deterioration of mental faculties. The review highlights the importance of balanced nutrition, healthy lifestyle practices, and Medhya Rasayana therapies in preserving cognitive function. Herbal preparations such as Brahmi, Mandukaparni, Ashwagandha, and Shankhapushpi have shown promising neuroprotective and cognition-supporting effects in experimental and clinical studies. In addition, yoga and pranayama may improve attention, emotional health, and quality of life. Together, these approaches provide a holistic framework that may complement conventional care and promote healthier cognitive ageing.

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#### Introduction:-

Neurological disorders have become an important public health concern due to their increasing prevalence and long-term impact on individuals and society.<sup>[1]</sup> Advances in healthcare have improved life expectancy; however, a growing aging population, along with lifestyle changes, dietary imbalances, and mental stress, has contributed to a

**Corresponding Author:-** Vd. Bhairavi Chilbule

**Address:-** PG scholar, Department of Swasthavritta and Yoga, PDEA'S College of Ayurveda and Research Centre, Sector No. 25, Pradhikaran, Nigdi, Pune- 411044.

rise in chronic neurological conditions.<sup>[2]</sup> These disorders often result in progressive impairment of cognitive and functional abilities, creating significant challenges for patients, caregivers, and healthcare systems. Among the various neurodegenerative conditions, Alzheimer's disease (AD) is the most prevalent cause of dementia. It is characterised by a gradual decline in memory, learning capacity, reasoning, and behavioural functions, eventually affecting an individual's ability to carry out routine daily activities.<sup>[3]</sup> According to the World Health Organisation, dementia affects more than 55 million people globally, and Alzheimer's disease contributes to nearly two-thirds of these cases.<sup>[4]</sup> The continuous increase in disease burden and the limited effectiveness of existing therapeutic options highlight the need for supportive and preventive strategies that can complement conventional management.

Ayurveda, one of the world's oldest systems of medicine, views health as a state of equilibrium between the body, mind, and consciousness. Although Alzheimer's disease is not mentioned as a distinct entity in classical Ayurvedic literature, many of its clinical manifestations resemble conditions described under Smritibhramsha, Smritinasha, and Dhi-Dhriti-Smriti Vibhramsha, which involve disturbances in memory and higher cognitive functions.<sup>[5]</sup> From an Ayurvedic perspective, ageing-related aggravation of Vata Dosha, depletion of Majja Dhatu, and impairment of mental faculties play a central role in the development of cognitive decline.<sup>[6]</sup> A distinctive feature of Ayurveda is its emphasis on prevention and preservation of health through Swasthavritta. Balanced nutrition, appropriate lifestyle practices, rejuvenative measures (Rasayana), and Yogic disciplines are considered essential for maintaining mental clarity and supporting healthy ageing.<sup>[7]</sup> In this context, Ayurvedic principles may offer valuable insights into the prevention and supportive care of neurodegenerative disorders. Therefore, the present review examines the role of Ayurveda in neurological disorders, with special emphasis on Alzheimer's disease, and discusses the relevance of Ayurvedic concepts and interventions in promoting cognitive health and improving quality of life.

### **Materials and Methods:-**

This review was prepared by collecting and analysing information from classical Ayurvedic texts and published scientific literature related to Alzheimer's disease, cognitive impairment, Medhya Rasayana, Ahara, and Yoga. Relevant articles from electronic databases and standard Ayurvedic references were reviewed and synthesized to evaluate the potential role of Ayurvedic interventions in supporting cognitive health and quality of life in Alzheimer's disease.

### **Results:-**

#### **Alzheimer's Disease: Clinical and Pathological Overview:-**

Alzheimer's disease is the predominant cause of dementia and represents one of the most challenging neurodegenerative disorders affecting the aging population. The condition is characterised by a gradual decline in memory, reasoning ability, language, and executive functioning, ultimately compromising an individual's capacity to perform routine activities independently.<sup>[8]</sup> The prevalence of Alzheimer's disease continues to rise globally, largely due to increasing life expectancy and demographic shifts toward older populations. The disease is associated with multiple risk factors including advanced age, cardiovascular disorders, diabetes mellitus, obesity, depression, traumatic brain injury, and genetic susceptibility.<sup>[9]</sup> Pathological changes primarily involve the accumulation of amyloid- $\beta$  plaques and neurofibrillary tangles, resulting in neuronal loss, synaptic dysfunction, and progressive cerebral atrophy, particularly within the hippocampus and cortical regions responsible for memory and cognition.<sup>[10]</sup> Although contemporary therapeutic approaches provide symptomatic benefit, their ability to alter the natural course of the disease remains limited.

#### **Ayurvedic Interpretation of Alzheimer's Disease:-**

Classical Ayurvedic texts do not describe Alzheimer's disease as a distinct nosological entity; however, several conditions outlined in the literature exhibit striking similarities to its clinical presentation. The progressive deterioration of memory observed in Alzheimer's disease closely corresponds to Smritibhramsha and Smritinasha, while impairment of intellect, judgment, and recollection may be correlated with Dhi-Dhriti-Smriti Vibhramsha.<sup>[5]</sup> Ayurveda regards memory as an outcome of the coordinated functioning of Atma, Manas, Buddhi, and Medha.<sup>[11]</sup> Disruption of this integrated system adversely affects cognitive performance and memory retrieval. The gradual loss of memory, behavioural alterations, and decline in daily functioning observed in Alzheimer's disease therefore align with disturbances described in Ayurvedic concepts of higher mental functions.<sup>[12]</sup> Furthermore, the disease demonstrates several characteristics of Jarajanya Vyadhi (age-related disorders), where advancing age is accompanied by natural predominance of Vata Dosha, tissue depletion, and declining neurological efficiency.<sup>[13]</sup>

**Factors Contributing to Cognitive Decline According to Ayurveda:-**

Analysis of Ayurvedic literature indicates that cognitive deterioration results from the interaction of multiple pathological processes rather than a single causative factor. Age-related predominance of Vata Dosha is considered central to the development of degenerative changes affecting the nervous system. Progressive depletion of Majja Dhatu, regarded as the tissue most closely related to neural integrity, contributes to impaired memory, confusion, and declining cognitive capacity.<sup>[14]</sup> The role of Ojas is also emphasised, as its depletion is associated with reduced mental resilience, diminished adaptability, anxiety, and fatigue.<sup>[15]</sup> Psychological stressors such as excessive worry, grief, and fear are believed to disturb Manas and Prana Vata, thereby adversely influencing memory and concentration. Another important mechanism involves impaired digestive and metabolic function. Mandagni may lead to the formation of Ama, which obstructs bodily channels, particularly Manovaha and Majjavaha Srotas.<sup>[16]</sup> Such obstruction interferes with adequate nourishment of neural tissues and contributes to progressive dysfunction. Long-standing lifestyle errors, irregular sleep patterns, poor dietary practices, and excessive mental strain collectively described as Prajnaparadha are also considered significant contributors to accelerated cognitive decline.<sup>[17]</sup>

**Tridosha and Maintenance of Cognitive Functions:-**

Ayurvedic physiology attributes cognitive performance to the balanced functioning of the three doshas. Vata is responsible for communication and regulation within the nervous system, Pitta facilitates understanding and intellectual processing, while Kapha provides stability, retention, and memory consolidation.<sup>[18]</sup> Disturbance of this equilibrium may result in deficits affecting learning, concentration, recall, and higher mental functions. Classical literature further identifies several factors that strengthen memory, including observation, comparison, discrimination, concentration, repeated practice, and continuous intellectual engagement.<sup>[19]</sup> These principles indicate that cognitive capacity is influenced not only by biological factors but also by sustained mental activity and disciplined learning practices.

**Dietary Approaches for Cognitive Health**

The reviewed literature highlights the importance of Ahara in preserving neurological function and supporting healthy ageing. Dietary interventions recommended in Ayurveda are directed toward pacifying aggravated Vata, nourishing depleted tissues, improving digestion, and promoting mental clarity.<sup>[20]</sup> Nourishing foods such as milk, ghee, wheat, rice, green gram, almonds, dates, figs, and sesame are repeatedly mentioned as supportive measures for maintaining Majja Dhatu. Particular emphasis is placed on Ghrita, which is traditionally regarded as beneficial for memory and intellectual functions.<sup>[21]</sup> Similarly, milk and honey are considered supportive of cognitive health owing to their nourishing and restorative properties. Digestive efficiency is considered equally important. Spices such as ginger, cumin, coriander, and black pepper are recommended to support metabolic activity and prevent the accumulation of Ama. A predominantly Satvika dietary pattern consisting of wholesome grains, fruits, vegetables, dairy products, and natural sweeteners is described as favourable for maintaining mental clarity and emotional stability.<sup>[22]</sup>

**Evidence Supporting Medhya Rasayana:-**

A substantial body of experimental and clinical evidence supports the traditional use of Medhya Rasayana in cognitive disorders. Among these, Brahmi (*Bacopa monnieri*) has been the most extensively investigated. Studies conducted in both animal models and human subjects have reported improvements in learning, attention, memory retention, and behavioural parameters.<sup>[23]</sup> Findings suggest a particular influence on information retention and reduction in forgetting. Research involving Mandukaparni (*Centella asiatica*) demonstrated enhancement of learning performance, improved memory retention, and structural changes indicative of increased neuronal connectivity.<sup>[24]</sup> Additional investigations suggest a role in neuronal repair and protection against oxidative stress. Cognitive-enhancing effects have also been reported for Yashtimadhu, Shankhapushpi, Ashwagandha, Guduchi, Jatamansi, and Jyotishmati.<sup>[25]</sup> Experimental studies indicate improvements in learning behaviour, neurotransmitter regulation, memory consolidation, and resistance to experimentally induced amnesia. Collectively, these observations suggest that Ayurvedic nootropic herbs may exert neuroprotective, antioxidant, adaptogenic, and cognition-supportive effects relevant to age-associated neurodegenerative conditions.<sup>[26]</sup>

**Yoga and Cognitive Function:-**

Yoga has emerged as a promising non-pharmacological intervention for individuals experiencing cognitive decline. The reviewed studies indicate that yoga-based practices may positively influence multiple domains of cognition, including attention, memory, processing speed, and executive functioning. Improvements have been reported among older adults with subjective memory complaints, mild cognitive impairment, and dementia. The beneficial effects of

yoga appear to extend beyond cognition. Several studies documented reductions in depressive symptoms, anxiety, stress, and neuropsychiatric manifestations commonly associated with cognitive disorders. Enhanced quality of life and reduced caregiver burden were also reported following structured yoga interventions.<sup>[27]</sup>

From an Ayurvedic perspective, these benefits may be explained by the regulation of Prana, the pacification of aggravated Vata, and the promotion of Chitta Prasadana (mental clarity). Gentle postures such as Padmasana, Siddhasana, Swastikasana, Vajrasana, and Shavasana have been traditionally recommended for elderly individuals.<sup>[28]</sup> Likewise, Nadi Shodhana, Bhramari, and Ujjayi Pranayama are believed to improve mental calmness, attention, and emotional stability.<sup>[29]</sup> Contemporary research provides additional support for these observations. Neuroimaging studies have demonstrated favourable changes in functional brain connectivity, while biochemical investigations suggest modulation of stress-related biomarkers. These findings indicate that yoga may influence both psychological and neurophysiological processes involved in cognitive decline.<sup>[30]</sup> The available evidence indicates a strong conceptual overlap between Alzheimer's disease and Ayurvedic descriptions of age-associated cognitive disorders. The condition may be understood as a consequence of progressive Vata predominance, depletion of Majja Dhatu, impairment of memory-related faculties, and disturbances in mental and physiological homeostasis. Dietary regulation, Medhya Rasayana, and yoga-based interventions collectively demonstrated beneficial effects on memory, cognition, emotional well-being, and functional capacity. Although further high-quality clinical investigations are required, the findings suggest that Ayurvedic approaches may offer valuable supportive strategies to promote cognitive health and enhance quality of life in individuals affected by Alzheimer's disease.

### **Discussion:-**

The present review suggests that the relevance of Ayurveda in Alzheimer's disease lies not merely in symptom management but in its broader understanding of cognitive decline as a consequence of ageing, lifestyle disturbances, and progressive deterioration of mental faculties. While modern research primarily focuses on molecular changes within the brain, Ayurvedic principles draw attention to factors that influence the overall maintenance of cognitive health. This distinction becomes important in Alzheimer's disease, where pathological changes begin years before clinical symptoms become evident. A recurring theme across the reviewed literature is the relationship between ageing and cognitive deterioration. In Ayurveda, old age is considered a phase dominated by Vata Dosha, and excessive Vata is associated with degeneration, instability, and decline in functional capacity. The gradual loss of memory, reduced comprehension, behavioural changes, and dependence observed in Alzheimer's disease appear consistent with this description. Although Ayurvedic concepts cannot be directly equated with modern neuropathology, they offer a functional framework for understanding the progressive nature of the disorder.

The findings also indicate that Ayurveda approaches cognitive decline through multiple pathways rather than a single intervention. Dietary regulation, maintenance of digestive efficiency, mental well-being, herbal support, and yogic practices are all considered interrelated components of care. Such an approach may be particularly relevant in Alzheimer's disease, which itself arises from a complex interaction of biological, psychological, and environmental factors. The emphasis on Ahara is noteworthy because nutrition influences not only physical health but also cognitive resilience. The traditional recommendation of nourishing and Medhya foods reflects an attempt to sustain tissue integrity and mental functions during ageing. The growing body of evidence on Medhya Rasayana provides further support for this perspective. Herbs such as Brahmi, Mandukaparni, Ashwagandha, Guduchi, and Shankhapushpi have demonstrated beneficial effects on learning, memory, and cognition in various experimental and clinical settings. Rather than acting through a single mechanism, these interventions appear to influence several processes associated with neurodegeneration, including oxidative stress, neuronal damage, and impaired adaptation to stress. This multifaceted activity is particularly relevant because Alzheimer's disease is now recognised as a disorder involving numerous interconnected pathological pathways.

Another notable observation is the potential role of Yoga and Pranayama in addressing dimensions of the disease that are often difficult to manage pharmacologically. Cognitive impairment frequently coexists with anxiety, sleep disturbances, emotional instability, and reduced quality of life. The reported benefits of yogic practices on attention, mood, memory, and overall well-being suggest that they may complement conventional care by supporting both mental and functional health. Their simplicity, accessibility, and safety make them especially suitable for elderly populations. An interesting convergence can be observed between traditional Ayurvedic concepts and current understanding of dementia prevention. Several factors described in Ayurveda, including poor dietary habits, psychological stress, disturbed sleep, and unhealthy lifestyle practices, are now recognised as modifiable risk factors

for cognitive decline. This overlap highlights the potential value of preventive strategies aimed at maintaining cognitive function before irreversible degeneration occurs.

However, the available evidence should be interpreted cautiously. Much of the research on Ayurvedic interventions remains exploratory, and variations in study design, sample size, duration of treatment, and outcome assessment limit direct comparisons. Future studies incorporating standardised interventions and robust clinical methodologies will be necessary to clarify the extent of their therapeutic benefit. Overall, the evidence reviewed indicates that Ayurveda offers a comprehensive perspective on Alzheimer's disease by integrating preventive measures, cognitive support, and lifestyle-based interventions. Although further scientific validation is required, the combined use of appropriate diet, Medhya Rasayana, and Yoga may provide meaningful support for cognitive health and quality of life in individuals affected by Alzheimer's disease.

### **Conclusion:-**

Ayurvedic interventions such as Medhya Rasayana, appropriate dietary practices, and Yoga such as Padmasana, Siddhasana, Swastikasana, Vajrasana, and Shavasana offer a practical framework for supporting cognitive health in individuals with Alzheimer's disease. By focusing on nourishment, mental well-being, and healthy aging, these approaches may complement existing therapies and help maintain functional independence and quality of life. Further clinical research is needed to better define their therapeutic potential in dementia care.

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