

CONCEPTUAL STUDY OF ALZHEIMER'S DISEASE IN AYURVEDA

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ABSTRACT

Alzheimer's disease (AD) is the leading cause of dementia, a broad term encompassing memory loss and other cognitive impairments significant enough to disrupt daily functioning. AD is recognized as a multifactorial disease, with two primary hypotheses proposed to explain its etiology: the cholinergic hypothesis and the amyloid hypothesis. In *Ayurveda*, aging is associated with a depletion of bodily tissues (*dhatu*), sense organs (*indriyas*), and strength (*bala*). This, along with the dominance of the *vata dosha*, leads to old age (*jara avastha*). Aggravated *vata dosha*, compounded by the influence of *rajas* and *tamas* (*manasika doshas*) can disrupt mental activities (*manasika chesta*), potentially causing memory impairment (*smritibhramsha*). Thus, the state of *smritibhramsha* can be likened to Alzheimer's disease due to similar pathophysiology and clinical features. This article endeavors to compile and interpret scattered

references of *smritibhramsha* in classical Ayurvedic texts within gradual the context of Alzheimer's disease.

KEYWORDS: Alzheimer's disease, Dementia, Smruthibhramsha, Jaravastha, etc.

INTRODUCTION

Alzheimer's disease is a neurodegenerative condition that progresses slowly over time, worsening as the condition advances. Its hallmark symptom is short-term memory loss.^[1]

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Typically, Alzheimer's is observed in individuals aged 65 and older, with approximately 4% to 5% of cases classified as early onset.^[2] It is the leading cause of dementia worldwide. Statistics indicate a significant prevalence of Alzheimer's disease, particularly among the elderly population. In the United States, about 6.5 million individuals aged 65 and older are living with Alzheimer's, with over 70% of them being 75 years old or older. Globally, of the approximately 55 million people affected by dementia, an estimated 60% to 70% have Alzheimer's disease.^[3] The incidence of Alzheimer's disease appears to be relatively low in India based on findings from several conducted studies.

According to Ayurveda, the progression of aging leads to a gradual depletion of *dhatu* (bodily tissues), *indriya* (sense organs), and *bala* (strength). This process, combined with the predominance of *vata dosha*, culminates in the *jara avastha* (old age). Aggravated *vata dosha*, along with the influence of *rajas* and *tamas*, *mano doshas* affecting the mind can disturb *manasika chesta* (mental activities), potentially leading to *smritibhramsha* (memory impairment).^[4] Hence the state of *smritibhramsha* can be correlate to Alzheimer's disease because of same nature of pathophysiology and clinical features.

MATERIALS AND METHODS

This article draws upon a comprehensive review of Ayurvedic texts, collecting materials pertinent to the concept of *Smruthibramsha* and other relevant topics. References encompassing both Ayurveda and modern perspectives on Alzheimer's disease were gathered from textbooks, various reputable websites, and articles.

NIRUKTHI & PARIBHASHA (ORIGIN & MEANING)

The impairment of memory can be coined as *smritibhramsha*. Word *smritibhramsha* consists of 2 words, *smriti* and *bhramsha*.

Smriti

Vyutpatti(origin): It derived from the sanskrit terms “*smru+ktin*” applying the *dhatu*, *smru* with the suffix *lyut*.^[5]

'*Smr*' *dhatu* meaning memory, recollection, remembrance.^[6]

Nirukti: It is a feminine word. *Smriti* is processed after experience.

Paribhasha(meaning): *smriti* is the ability to remember previously learnt things.^[7]

Recollection of things directly perceived, heard or experienced earlier is called *Smriti*.^[8]

Bhramsha

Vyutpatti(origin): it is derived from 2 terms, *bhramsha* + *gha~ja* pratyaya.^[9]

Nirukti: *Bhramsha* is a masculine word. *Bhramsha* refers to slipping away or Downfall.^[10]

Paribhasha(meaning): *Bhramsha* virtually means going away or slipping away, decline or decrease.^[11]

Smriti bhramsha refers to being deprived of memory.

PARYAYA (SYNONYMS)

Terms like *smritihrasa*, *smritinasha*, *smriti vibhrama* or *smriti vibhramsha* gives similar meaning.^[12]

NIDANA (CAUSITIVE FACTORS)

On *vibhramsha*, memory becomes nullified. This occurs due to the influence of *rajas* and *tamas*. Any disruption in the brain, whether at the anatomical or physiological level, such as *ayoga* (inaction), *atiyoga* (excessive action), or *mithyayoga* (erratic activity) in terms of *kaya* (body), *vak* (speech), or *manas* (mind), directly affects *prajna* (intellect), which is termed as *prajnaparadha* (intellectual misconduct). *Jara avastha* by default is a *vata* predominant *avastha*, thus *vata prakopaka ahara vihara* leads to *jarajanya vyadhi*. It is believed that individuals with a *vata prakruti* (constitution) inherently possess *alpa smriti* (poor memory), *chala smriti* (unstable memory), and *srutagrahi* (difficulty in retaining information). So this school of thought opines influence of *prajnaparadhajanya kayika*, *vachika manasika* misconducts effects the *jarajanya kupita vata* and further influence the *manasika dosha* like *rajas* and *tamas* and nullify the *smriti*.^[13]

CAUSES AND RISK FACTORS OF ALZHEIMER'S DISEASE

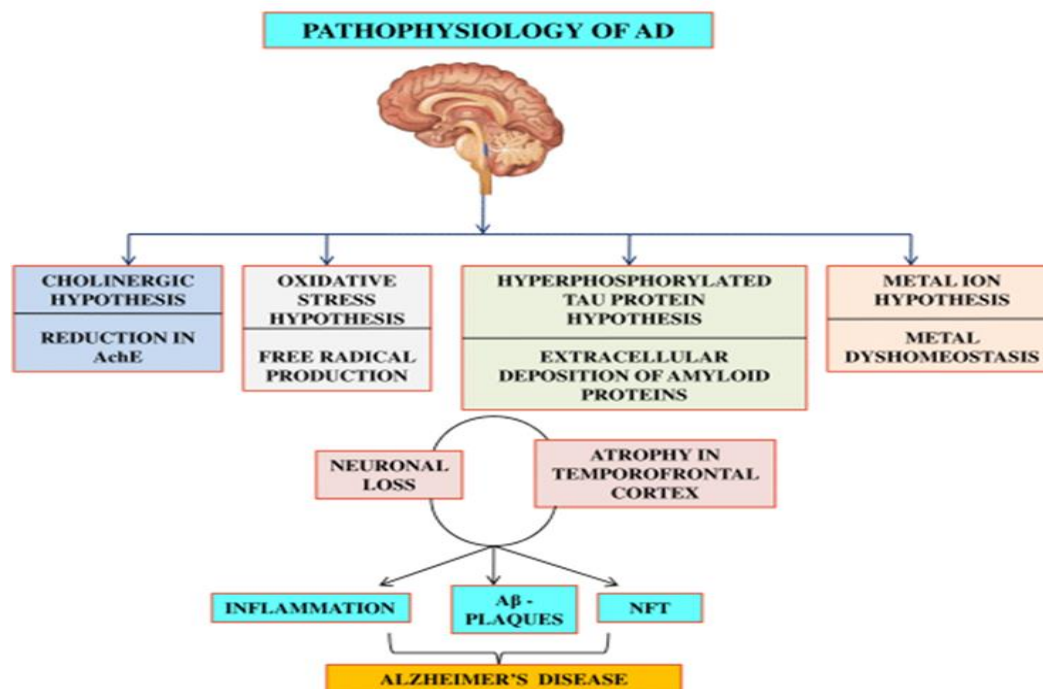
Alzheimer's is considered multifactorial, with risk factors including age, genetics, head injuries, vascular diseases, infections, and environmental factors. The underlying pathological changes, such as the accumulation of β -amyloid deposits and neurofibrillary tangles, remain unclear.^[14]

SAMPRAPTHI (ETIOPATHOGENESIS)

Prajnaparadha + *Vardhakya Avastha* ➡ *Vata prakopa* influence the *manasa dosha* ➡ *Raja* and *tamas prakopa* ➡ *Mano avarana* ➡ Loss of *tatva jnana* ➡ *Smritibramsha*^[15]

PATHOPHYSIOLOGY OF ALZHEIMER'S DISEASE

The two prominent pathologic hallmarks of Alzheimer's disease are (a) extracellular accumulation of β -amyloid plaques and (b) intracellular neurofibrillary tangles (NFTs). These abnormal protein aggregates disrupt neuronal function and communication, leading to synaptic dysfunction, neuronal loss, and ultimately, the clinical manifestation of dementia characteristic of AD.^[16]



PURVARUPA (PREDOMINAL SYMPTOMS)

Jaravastha is the stage of degeneration, during which physical features such as reduced strength, greying of hair, or tooth loss may occur. Subsequently, psychological features such as reduced memory can manifest. Manasika factors like *krodha* (anger) afflict the mind, leading to a state of *sammoha* (clouding of judgment), which ultimately contributes to *smritibhramsha* (memory impairment). Confusion is often observed as a precursor to *smritibhramsha* in this stage.^[17]

ROOPA (CLINICAL FEATURES)

The decline of *medha* (intellectual power of the mind) typically begins in the fourth decade of life, while *buddhi* (power of reasoning) deteriorates around the ninth decade of life, as observed physiologically. When an individual fails to recall information accurately or as it was stored, it results in erratic remembrance, known as *smriti vibhrama*. With aging, along

with diminished physical strength, there is a decline in various psychological capabilities of the mind. These include *grahana* (perception), *dharana* (retention), *smarana* (remembrance), and *vachana vijnana* (ability to learn new things).^[18]

CLINICAL FEATURES OF ALZHEIMER'S DISEASE

Alzheimer's disease is characterized by a progressive decline in cognitive abilities, encompassing memory, abstract thinking, problem-solving, and learning. Individuals affected by Alzheimer's may also experience social disorientation and a loss of navigational skills. Interestingly, despite the cognitive decline, routine behaviors and superficial conversation often remain intact during the early stages of the disease.^[19]

BHEDA (TYPES)

Smritibhramsha usually occurs as a clinical feature in many diseases. Considering the causative factors, *Smritibhramsha* can be classified into two types.

[a] *Swatantra smritibhramsha* - Morbid *dosha-dhatu* forms due to dysfunctioning of normal internal homeostatic due to not following *sadvritta*, *apathya ahara vihara sevana* leads to forming pathology by itself without any role of external factors.

[b] *Paratantra smritibhramsha* - Caused due to interference of external factors like *madya* which would lead to *sammoha*. This leads to *Smritibhramsha*, begins at some point of time.

CLINICAL TYPES

Dementia is also classified depending upon prognosis is reversible dementia and irreversible dementia.^[20]

[a] Reversible Dementia - It is caused in about 20% of cases. These are caused due to consumption of such drugs, any systemic illness like Diabetes mellitus, Hypothyroidism, Dementia due to under nutrition, alcohol, etc.

[b] Irreversible Dementia - Irreversible dementia causes includes conditions like Alzheimer's disease, Multi-infarct dementia etc.

CHIKITSA (TREATMENT)

In *jarajanya vyadhi*, *chikitsa* aims at delaying the normal aging, preventing early aging, minimising the discomfort and treatment methods that would improve quality of life.

I) Three sets of treatment have been explained as broad-spectrum line of management of *manasaroga*.^[21]

a. *Daivavyapashaya chikitsa*.

b. *Satvavajaya chikitsa*.

c. *Yuktivyapashaya chikitsa*.

II) *Nidana parivarjana*.

III) Depending upon the mode of action of drugs *shodhana* and *shamana* are the 2 methods of treatment.

Rasayana is given prime importance for multiple reasons. Following are the different method of applications of *rasayana* therapy.^[22]

[a] As Immunomodulation- By augmenting or reducing the ability of the immune system.

[b] As Adaptogen- Increases the ability of an organism to adapt to environmental factors.

[c] As Antioxidant- Dodging the damage caused by oxygen free radical.

[d] As Nootropic- Promote intelligence and functions of brain.

Medhya rasayana drugs (drugs which promote memory & intellect) such as *Brahmi*, *Shankhpushpi*, *Mandukaparni*, *Guduchi*, *Vacha* etc. acts on brain to improve memory and intellectual capacity. *Haimavathi vacha* (*Iris Germanica* Linn.) being the *medhya dravya* and *Vareity* of *vacha* acts on brain to improve memory and intellectual capacity. And it proves beneficial in power of hearing, goitre, elephantiasis, and hoarseness of voice.^[23]

PHARMACOLOGICAL INTERVENTION

Cognition enhancers, categorized as cholinergic activators, glutamate (NMDA) antagonists, and miscellaneous cerebroactive drugs^[24], are utilized in Alzheimer's treatment. Non-steroidal anti-inflammatory drugs^[25] and vaccination^[26] also play roles in managing the disease.

PATHYA-APATHYA (WHOLESOME AND UNWHOLESOME DIETARY)

The role of diet and lifestyle regimens holds significant importance in disease management. *Nidana parivarjana*, or avoiding causative factors, is emphasized as the primary approach, underlining the importance of steering clear of unwholesome dietary and lifestyle habits while adhering to wholesome ones, known as *pathya*. For individuals with Alzheimer's disease, the recommended diet includes rice, green gram, purified water, rock salt, Indian gooseberry, barley, milk, clarified butter, honey, and lean meat. Avoid sour, pungent, alkaline, and salty foods, as well as dry or uncooked vegetables.^[27] Additionally, maintaining control over urges like sleep, hunger, thirst, and sneezing is crucial to prevent exacerbating the disease.^[28]

DISCUSSION

- Alzheimer's disease presents a significant healthcare challenge globally, characterized by its progressive cognitive decline and impact on patients' quality of life. This discussion examines Alzheimer's disease from both Ayurvedic and modern medical perspectives, highlighting the similarities, differences, and potential synergies between these approaches.
- Utilizing the *yukti pramana* (logical reasoning) one can analyse and interpret them. Ayurveda says, aging is a natural process marked by the accumulation of *vata dosha*, which governs movement and neurological functions. According to this theory Alzheimer's disease is a state of imbalance in the dosha (bioenergetic forces) of the body, particularly *vata dosha* leads to *vikruti* in *manasika doshas* like *rajas* and *tamas*. Therefore, age-related conditions such as Alzheimer's are attributed to aggravated *vata dosha*, leading to cognitive impairment.
- AD is understood as a type of *Manasika vyadhi* (mental disorder), specifically categorized as *Jara janya smrutibhramsha*, meaning memory loss associated with aging. Ayurvedic texts emphasize the role of lifestyle factors, including diet, exercise, and mental well-being, in maintaining cognitive health. *Rasayana* therapies, which include rejuvenating herbs and lifestyle practices, are prescribed to balance the doshas and promote longevity.

CONCLUSION

- *Smritibhramsha* can be correlated to Alzheimer's disease because of the similar nature of pathophysiology and clinical features.
- Explanation of Smriti is available in many of Ayurveda literatures but those are in a scattered form. Utilizing the *yukti pramana*, one can analyse and interpret them.
- Alzheimer's disease presents significant challenges to patients and caregivers. A comprehensive understanding of its etiology, clinical features, and treatment modalities from both Ayurvedic and modern perspectives is crucial for improving patient outcomes and quality of life.
- Continued research and collaboration between these disciplines are essential for advancing our understanding and improving outcomes for individuals affected by this devastating condition.

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