

DEMENTIA: A THREAT TO QUALITY LONGEVITY

Dr. Lakshmy Devi K.* and Dr. Jitendra Kumar Sharma**

*PG 1st Year Scholar (Batch 2018), **Prof. & H.O.D Rachana Sharer.
PG Dept. of Rachana Shareer, M.M.M.Govt.Ay.College, Udaipur (RAJ.) - 313001.

*Corresponding Author: Dr. Lakshmy Devi K.

PG 1st Year Scholar (Batch 2018), PG Dept. of Rachana Shareer, M.M.M.Govt.Ay.College, Udaipur (RAJ.) - 313001.

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ABSTRACT

Vedic and Ayurvedic term 'Ayush' implies long & healthy life. Ayurveda, the science of life provides us with the measures that prolong life. Acharya Vagbhat hence quotes thus- "Ayu: kamayamaanena dharmarthasukha saadhanam / Ayurvedopadesheshu videya: paramadara: //" A.H. Su 1/2 // Ayurveda observes natural dominance of vata dosha in old individuals and so vata dominant diseases are more likely to occur. The classic Sharngadhara Samhita quotes about natural depletion of shareer bhavas with each decade of life. Thus degenerative and debilitating diseases like Dementia, Stroke are commonly seen in older populations. Increasing age is the single strongest risk factor for dementia; a neurodegenerative syndrome characterized by impaired memory and activities of daily living and much more. Dementia is usually progressive and the exact symptoms experienced by a person with dementia depend on the areas of the brain that are damaged. The process of degeneration and wear out increases with age and maintenance of normal function obviously requires special efforts. Ayurveda drugs are helpful in this regard. Dementia being a debilitating disease in later stages, becomes unpleasant influencing the quality of life of the demented person, the dependents as well as the caretaker.

KEYWORDS: Ayu, Ageing, Brain, Cognition, Medhya Rasayana.**INTRODUCTION**

Ayurveda, considers a normal human life span to be of 100 years.^[1] Acharya Charaka and Vagbata, in their respective treatises named the first chapters "Deerganjiviteeyam" and "Ayushkamyam", which in itself signifies the importance of adopting measures for a longer and healthier life. The term Jara / Rasayanatantra (Medical Gerontology) among Ashtangas indicate that the viable and dynamic concepts of Geriatrics were incorporated into Ayurvedic tenets, much ahead of time. "Anayasena maranam vina dainyena jeevitam"- This quote from the scriptures of Indian philosophy infers to a peaceful and self sufficient life which is euphonic with the Ayurvedic perspective of Geriatric medicine. Afield, the term 'Ayu' connotes to quality of life in addition to life span.

Ageing is associated with an accumulation of cellular and molecular changes that impair normal physiology. This impairment in the normal functioning of cells, tissue, organs and bodily systems, in turn triggers age-associated diseases. Thus, ageing in itself becomes a risk factor for other diseases.

It is well-established that both brain and cognition change with age, and that although there are early gains, old age brings with it decrements in both aspects.^[2]

Studies have shown that apparently both cortical thickness and cortical area decrease in older age. Cortical volumetric changes appear to be differentially driven by two components: development and age. In development, increase appears most driven by expansion of cortical area, whereas in older age, decrease appears most driven by cortical thinning.^[3]

Dementia is recognized as the fastest growing major cause of disability globally. World wide, around 50 million are diagnosed with Dementia; 10 million being added every year. WHO estimates 82 million by 2030 and 152million by 2050.^[4]

Though a direct reference to dementia in Ayurvedic literature is obscure, the symptoms like forgetfulness and memory loss have been acknowledged. Cognitive function was well recognized and Sanskrit terms Buddhi for intelligence and Chittanasa (Chitta means mind, nasa means loss of) for dementia were in use.

Dementia may have a profound impact on the health-related quality of life (HRQoL) of both the patient and those who care for them. With almost no cure in contemporary medicine, hope turns towards the traditional counterparts. The remedies called Rasayana act as micronutrients which are organ and tissue specific.

Those specific to brain tissue are called Medhya Rasayana. The popular Medhya rasayanas being Ashwagandha (*Withania somnifera* Dunal), Brahmi (*Bacopa monnieri* Linn), Mandukaparni (*Centella asiatica* Linn) and Sankhapuspi (*Convolvulus pluricaulis* Chois).^[5] There is well-documented evidence of research studies regarding treatment of age-related disorders in *ManoVikaras* including dementia.

LITERARY REVIEW

The word Dementia comes from the Latin 'de' meaning "apart" and 'men' from the 'genitive mentis' meaning "mind."^[6] WHO defines it as a syndrome-usually of chronic and progressive nature in which there is a deterioration of cognitive function, affecting memory, thinking, behavior and ability to perform daily activities.

Many underlying causes of Dementia have been recognized; the most common being Alzheimer's disease. Other causes include brain tumor, infection of the brain, neurological disorders like- Parkinson's disease, Huntington's disease, drugs and other substances like excess alcohol, malnutrition, endocrine abnormalities, vascular dementia due to stroke, Creutzfeldt-Jakob disease, nutritional deficiencies like-vitamin B-12 and folate deficiency, certain types of hydrocephalus, Porphyria etc.^[7]

Major risk factors for dementia include old age, long-term consumption of "western" diet, physical and cognitive inactivity, and epigenetic and environmental factors. Other risk factors for dementia include cardiovascular and cerebrovascular problems, excessive alcohol consumption, social isolation, traumatic brain

injury, and having one or two copies of the APOE ϵ 4 genetic variant.^[8]

The brain structure constantly changes throughout lifetime. This implies that in normal ageing free from dementia, the brain undergoes structural changes. MRI studies of brain conclude that the brain shrinks in volume and the ventricular system expands in healthy ageing. Largest changes are seen in the frontal and temporal cortex and in putamen and thalamus. Cortical thickness and subcortical volume seems to decrease with concomitant increase of the cerebrospinal fluid (CSF) space. As compared to neuronal loss, volumetric reduction is minimal. There is a reduction in length, almost 50%, of myelinated neurons. Shrinkage of neurons, reduction of synaptic spines and lower number of synapses accounts for reduction of grey matter. Reduction in specific cognitive abilities like executive function, processing speed and episodic memory are seen in healthy ageing owing to structural brain characteristics.

Changes that occur in the brain of a person with Dementia are both structural and chemical. They impact one another to reinforce damage to the brain. As the disease progresses, Plaques (b-amyloid) gather between nerve cells, Tangles (tau) gather inside brain cells. These develop in areas of brain corresponding to memory, thinking and later spread to areas responsible to speech and spatial perception. Eventually brain cells die, tissue is lost and overall size of brain shrinks to 1/3 of the normal. These changes affect the memory, reasoning and at one point the ability to function independently is lost.

Doctors diagnose dementia if two or more cognitive functions are significantly impaired.

Table 1: Classification of dementia according to MMSE score.

1	Early stage / mild dementia	20-24 of 30 points
2	Middle stage/moderate dementia	13-20 of 30 points
3	Later stage / severe dementia	12 out of 30 points

On the basis of changes in the brain, Dementia can be differentiated.

Table 2: Types of Dementia.

Types of dementia	Image of the brain	1 st Symptom	Mental status of Individual	Neuro-psychiatry	Neurology
AD/ Alzheimer's Dementia (60-62%)	Hippocampal and entorhinal cortex atrophy	Memory loss (mild-moderate stages)	Episodic memory loss	Normal phase of Memory	Initially seems normal
VD/ Vascular Dementia (17%)	Cortical and or subcortical infarctions, confluent white matter disease	often;not always sudden, variable, apathy, falls, focal weakness	Frontal/ executive cognitive rate low; can spare memory	Apathy, delusions, anxiety	Usually motor slowing, spasticity; can be normal
FTD/ Fronto-temporal	Frontal, insular, and / or temporal atrophy;sclerosis	Language: hyperorality, poor judgment/	Frontal /executive, language; spares	Apathy, disinhibition, hyperorality,	May have vertical gaze palsy, axial rigidity,alien

Dementia (4%)	spares posterior parietal lobe	insight, speech	drawing	euphoria, depression	hand, or MND, dystonia
LBD/ Dementia with Lewy-body (2%)	Posterior parietal atrophy; hippocampus larger than in AD	Visual hallucinations, delirium, Capgras' syndrome, parkinsonism, REM sleep disorder	spares memory; drawing and frontal/ executive; delirium prone	Visual hallucinations, depression, sleep disorder, delusions	Parkinsonism
CJD/ Creutzfeldt-Jakob Disease	Cortical ribboning and basal ganglia or thalamus hyperintensity on diffusion/ FLAIR MRI	Dementia, mood, anxiety movement disorders.	Variable, frontal/ executive, focal cortical, memory	Depression and anxiety	Rigidity, Parkinsonism, Myoclonus

Dementia can show ambiguous characteristics and with longer periods the affected individual culminates into a disabled one. The pharmacological treatment of Dementia involves use of Haloperidol, memantine, cholinesterase inhibitors; which is quite inadequate with many side effects.

Susruta Acharya defines health as equilibrium of Dosha, Dhatu, Mala, Agni and also quotes "Prasannaatmendriyamanah" indicating the importance of mind.^[9] Charaka Acharya while enumerating the Sukhayu lakshana says "Manasa roghabhyam anabhidritasya". Ayu has been described as inevitable and the treatment of diseases is necessitated by Acharya sharangadhara. He also opines that there is a depletion of tissues with every passing decade of life. The deterioration of Medha in 4th and that of Budhi in 9th decade has been stated. In old age, the normal vata is found to aggravate.^[10] Due to this vitiated vata, symptoms of Alpa smriti, chaladhritismritibudhi, Anavasthithachittata are seen especially in the old. Charaka Acharya explains Smrti as remembrance of things directly perceived, heard or experienced earlier. Normal function of Vata as the controller and stimulator of mind, the Cognitive, is cited through "Niyanta Praneta cha Manasa". The memory goes astray due to the person being overcome by rajas and tamas; this state is explained as Smrti Bhrmsha. He has explained about Smrtinasha in Unmada and Apsmara. From above citations, it can be inferred that Vata prakopa promotes decline of satwa with age. This tends to decrease normal powers of Grahana, Dharana, Vachana, Smarana and Vijnana. Susceptibility to other Vikaras due to vriddhaVata like Pralapa Manobhramsa Bhaya Shoka Dainya etc. accounts for the increasing incidence of dementia, delirium and depression with advancing age.

The concept of Vayasthapana deals with preserving the youthfulness of a body irrespective of its age and restricting progression towards senescence, along with enhancement of longevity, intellect, and prevention from diseases. Rasayana Tantra, one of the Ashtangas of Ayurveda is thus dedicated to rejuvenation, regeneration and healthy aging. 'Rasāyana' should not be mistaken as a therapy exclusively for old age but is adopted from

paediatrics to geriatrics. Ayurveda mentions the use of several herbs for the treatment of nervous system disorders, including memory loss, but only recently have studies been carried out, to determine the effects of these herbs on CNS disorders.

MATERIALS AND METHODS

The article is based on review of Ayurvedic texts. Materials relevant to Ageing, Ayu, Dementia, and other related topics have been collected. The main texts referred are Caraka Samhita, Ashtanga Hridaya, Susruta Samhita, Sharangadhara Samhita, Neurology texts. Various research articles and web sites have also been searched.

DISCUSSION

History of Dementia is as old as mankind; beginning in the foetus and ending with human life. Dementia has been recognized, in every sense, as destruction of brain; a pathological process in the brain caused by quite different illnesses that reduce the quality of life. Forgetfulness is a part of the normal aging process which usually does not interfere with the daily activities unlike dementia.^[11] Dementia therefore, is quite disparate from the symptoms of normal aging and can affect people at any age. There are no clear criteria for diagnosis of Dementia due to lack of gold standard guidelines. The clinical diagnosis depends on the form, symptoms and pathology involved. Diagnosis is missed at initial stages due to overlapping of symptoms of old age. Dementia also mimics variety of diseases, so there is a possibility of misdiagnosis. Early diagnosis is the first step to understand and manage this disease This helps to minimise the occurrence of any catastrophic events, and instead helps maintain the quality of life.

The cognitive and functional decline associated with Dementia has paved way to the measurement of HRQoL, which attempts to evaluate the impact of dementia. HRQoL is defined as the way how health empirically affects quality of life. It is a multi-dimensional concept that includes domains related to physical, mental, emotional and social functioning.^[12] Dementia requiring long-term support and care; the burden falls on the

caretakers as well. Experience of caring though satisfactory often becomes stressful; high levels of anxiety and depression takes a heavy toll mentally, physically and financially. So it is highly essential that their HRQoL is also ensured.

Dementia is not an inevitable consequence of ageing. Where contemporary medicine fails to either prevent or retard the progress of these age-related disorders, Ayurvedic interventions in various health areas like skin and brain ageing, etc. seem to be the answer. Autophagy and DNA damage induced repair are inter-related quintessential pathways and are significantly altered during stress and ageing. Studies have shown that Medhya Rasayanas seem to alter these processes. They retard brain ageing and help in regeneration of neural tissues besides producing antistress, adaptogenic and memory enhancing effect. The use of phytochemicals is of immense interest lately in the treatment of Dementia. Studies on Brahmi have proven it as a Neuroprotector and Nootropic drug (cognition enhancer).^[13] Similarly, studies have proven Brahmi gritam or Purana grita to be useful.^[14] Ayurvedic drugs act on neuro-endocrine – immune systems and effect cognitive functions. According to Ayurveda, chronic vata prakopa when left unattended leads to Dementia. The progression of the same leads to vishada has been opined which results in a chain of other diseases (“Vishado Rogavardhanaanaam Sreshtam”). So one has to prevent vata kopa and satwa kshaya in old age. This can be achieved by the use of drugs which reduce aggravation of vata, boost memory etc prior to the approaching tissue decline stated in each decade. Research advances in this regard could prove beneficial not alone to stunt the progress of the disease but also in providing a better quality life.

CONCLUSION

Dementia, a debilitating neurodegenerative condition results in a progressive and irreversible decline in cognitive, social and physical function. Being the most devastating cognitive disorder of the elderly, the focus is to promote patient well-being and to maintain quality of life. HRQoL is recognized as a valuable health measure in Dementia. Optimum level of HRQoL can be achieved by timely intervention of Medhya Rasayanas. Being sensitive to age associated cognitive decline, intake of Medhya Rasayanas at an early age is recommended; especially in individuals who are most susceptible. These could prove effective to ameliorate age associated decline.

REFERENCE

1. Caraka samhita of Agnivesh, Pt.Kashinath Shastri and Gorakhnath Chaurvedi, Vidyotini hindi commentary, Chaukamba bhartiya Academy part1.
2. Grady.C The cognitive neuroscience of ageing. *Nat Rev Neurosci*, 2012; 13(7): 491-505.
3. Storsve AB, et al. Differential longitudinal changes in cortical thickness, surface area and volume across the adult life span: Regions of accelerating and decelerating change. *J Neurosci*, 2014; 34(25): 8488–8498.
4. WHO newsletter, Dementia, 2012.
5. Caraka samhita of Agnivesh, Pt.Kashinath Shastri and Gorakhnath Chaurvedi, Vidyotini hindi commentary, Chaukamba bhartiya Academy part, 2: 39.
6. Pathak KP., An Overview of Dementia, MedDocs Publications, 2018; 1-22.
7. R.Alagappan, Dementia, Manual of practical medicine, 571-573.
8. Harrison's neurology in clinical medicine, 3rd edition, 310-332.
9. Susruta samhita.
10. Ashtanga Hridaya.
11. Bulterijs S., Hull R.S., Bjork V.C., Roy A.G. It is time to classify biological aging as a disease. *Front Genet.*, 2015; 6: 205.
12. Crellin NE Orrell M, McDermott O , et al . Self-efficacy and health-related quality of life in family carers of people with dementia: a systematic review. *Ageing Ment Health*, 2014; 18: 954.
13. Singh Karan Et Al., Ayurvedic Management of Age Related Cognitive Decline Or Dementia, *IAMJ: Feb.*, 2017; 428.
14. Farooqui AA, Farooqui T, Madan A, Ong JH, Ong WY. Ayurvedic Medicine for the Treatment of Dementia: Mechanistic Aspects. *Evid Based Complement Alternat Med*, 2018.
15. Mishra S., Trikamji B., Singh S., Singh P., Nair R. Historical perspective of Indian neurology, 2013; 16(4): 467–477.
16. Sonnen J. A., Larson E. B., Haneuse S., et al. Neuropathology in the adult changes in thought study: A review, 2009; 18(3): 703–711. doi: 10.3233/JAD-2009-1180.
17. Vinod Verma, Prevention of Dementia, occational publication 68 of IIC, 2015.
18. Durgawati Devi et al. A critical review of concept of aging in Ayurveda, *Ayu*, 2010 oct-dec; 31(4): 516-519.
19. Sharangadhara Samhita
20. Seeher K, Low LF, Reppermund S, et al. Predictors and outcomes for caregivers of people with mild cognitive impairment: a systematic literature review. *Alzheimers Dement*, 2013; 9: 346.
21. Jing W, Willis R, Feng Z. Factors influencing quality of life of elderly people with dementia and care implications: A systematic review. *Arch Gerontol Geriatr*, 2016; 66: 23–41.
22. Garima Srivastava, Rakesh Kumar Tripathi, Sarvada Chandra Tiwari, Bhupinder Singh, Shailendra Mohan Tripathi *Indian journal of psychological medicine*, 2016; 38(2): 133.
23. Algar K , Woods RT, Windle G . Measuring the quality of life and well-being of people with dementia: a review of observational measures. *Dementia*, 2016; 15: 832–57.doi:10.

24. Brahma S. K., Debnath P. K. Therapeutic importance of Rasayana drugs with special reference to their multi-dimensional actions, 2003; 16: 160–163.
25. Age dependent neuroprotective effects of medhya rasayana prepared from *Clitoria ternatea* Linn. in stress induced rat brain, Raghu KS, Shamprasad BR, et al., *Ethnopharmacol*, 2017 Feb 2; 197: 173-183.
26. Neuronutrient impact of Ayurvedic Rasayana therapy in brain aging, Singh RH, Narsimhamurthy K, Singh G. *Biogerontology*, 2008 Dec; 9(6): 369-74.