

Research Article

A STUDY ON EARLY DETECTION OF ALZHEIMER'S DISEASE AND ITS IMPACT OF TREATMENT APPROACHES AMONG AGE GROUP OF 60 AND ABOVE ELDERLY PEOPLE SELECTED OLD AGE HOME AT TUMKUR

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ABSTRACT

Introduction: Alzheimer's Disease is a disorder of the brain. It is the most common form of Dementia and constitutes 75% of all dementia cases. Alzheimer's disease-associated Dementia is amongst the chief causes of debilitation in the elderly (>65 years of age). It is a progressive disease that remains undiagnosed at its prodromal stages due to the absence of noticeable symptoms, but as the disease progresses further and symptoms first appear, the extent of neuronal damage becomes irremediable. **Objectives:** 1. to assess the early signs and symptoms of Alzheimer's disease among elderly residents using standardized screening tools. 2 To find the impact of treatment approaches in Alzheimer's disease. 3. To explore the effectiveness of physical exercise and deep breathing techniques in improving early detection of Alzheimer's disease. **Methods:** The study sample size is 60. The researcher used the Alzheimer's Questionnaire based on the Mini-Mental State Examination (M.M.S.E.) Interview, British Columbia Health Ministry, copyright by Banner Sun Health Research Institute. Activities of Daily Living (ADL) Alzheimer's disease Questionnaire and Impact of Treatment: Non-pharmacological approaches such as Simple Physical Exercise, Deep Breathing Technique, and Meditation, and the tool have been translated into Kannada for easy application by elderly people. **Results:** The study sample consisted of 60 elderly people; 62% had normal cognitive function, 32% had mild cognitive impairment, and 2% had Dementia. The lifestyle structure of the older adults is that about 32% have no physical activities, 15 is about 25% have a history of diabetes, 7 is about 12% have a history of hypertension on regular medication. The t-value for the relationship between age group and memory loss is $t = 1.9$. Therefore, there is a significant relationship between the aging process and memory loss. Findings show that 90% of individuals benefited from physical exercise, 75% from deep breathing, and 80% from meditation, highlighting the promising potential of non-pharmacological approaches to improve quality of life for those with Dementia.

Keywords: Alzheimer's, Treatment approaches, Activities of Daily Living, Cognitive function, memory.

INTRODUCTION

Alzheimer's Disease is a complex and devastating neurodegenerative condition that poses significant challenges for both patients and health care providers.² The disease features amyloid plaques and abnormal protein build-ups that disrupt brain cell function, leading to neuron death and brain shrinkage.

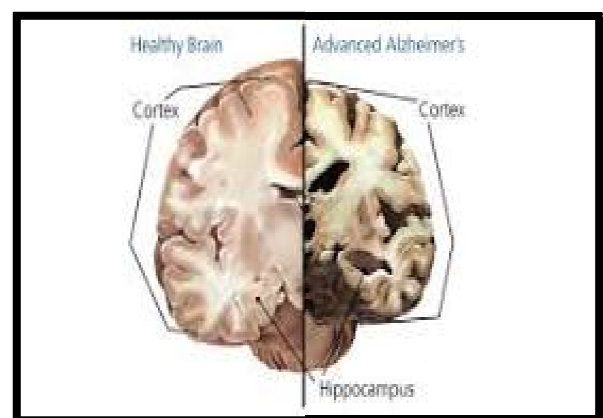
Moreover, it first damages memory-related areas, then spreads to regions for language, reasoning, and behaviour. The main risk factors for Alzheimer's disease include age, genetics, family history, head injuries, high blood pressure, diabetes, heart disease and stroke, high cholesterol, smoking, obesity, poor sleep, lack of physical activity & mental activity, excess alcohol, and social isolation.¹⁷

It is characterized by progressive impairment of memory, cognitive function, judgment, language, and activities of daily living. Early stage: subtle memory issues and cognitive difficulties, often mistaken for identity. Middle stage: confusion, language problems, trouble recognizing loved ones. Late stage: severe loss of independence, inability to communicate or perform basic tasks.¹⁸

Alois Alzheimer, A German Neurologist, noticed the presence of Amyloid Plaques and massive loss of neurons while examining the brain of his first patient who suffered from memory loss and change of personality before dying and described the condition as a serious

disease of the cerebral cortex. Emil Kraepelin named this medical condition Alzheimer's Disease for the first time in his 8th Edition of Psychiatry Handbook.¹⁹

In addition to this, the most common causes of Alzheimer's disease are age, genetics, diabetes, smoking, head injury, depression, cardiovascular disease, high blood pressure, high cholesterol, and obesity.



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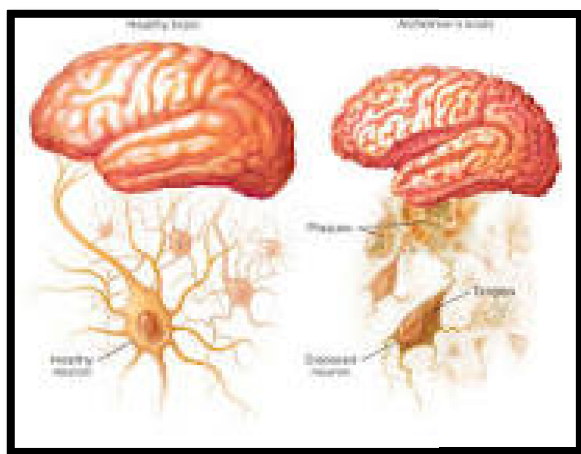


Fig 1- Human brain representing the structure of Normal and Alzheimer's

Moreover, Alzheimer's disease can be identified based on structural and functional changes in the brain by MRI and PET scans. The condition is primarily characterized by severe tissue shrinkage, atrophy, and toxic accumulation of abnormal protein deposits known as amyloid plaques.

In 2019, India was the 4th largest contributor to the global burden of Dementia and by 2050 it is expected to surpass Japan and the USA to become the country with the 2nd largest number of Dementia cases. India was estimated to have 3.69 million active cases of Alzheimer's disease and other Dementias. Moreover, a prevalence rate of 4.3% for Alzheimer's Disease and other Dementias in India was reported.

However, the prevalence of Alzheimer's Disease varies markedly in different states of the country, with Kerala, Goa, Andhra Pradesh, Tamil Nadu, and Himachal Pradesh ranked as the top five contributors to the country's total Alzheimer's Disease case load.²⁰

However, Dementia has emerged as a global health challenge. According to the World Health Organization's 2022 blueprint for dementia research, an estimated 55.2 million individuals globally are affected. The prevalence among those over the age of 60 varies by region, with Southeast Asia reporting 2.9%, Europe 6.5%, and other regions between 3.1% and 5.7%.²¹

In addition, Karnataka is among 11 states with prevalence higher than the national average⁷. Alzheimer's Disease forms a major burden to the worldwide health care system. It is estimated that in the coming decades, this burden will significantly impact developing countries like India, which currently lack adequate awareness and infrastructure to combat the rising disease caseload.²²

As per WHO, currently more than 55 million people have Dementia worldwide, over 60% of whom live in low- and middle-income countries. In conclusion, nearly 10 million new cases are diagnosed each year. Women are disproportionately affected directly and indirectly.²³

Alzheimer's Disease Internationally is in official relations with the WHO, the special agency of the United Nations responsible for international public health. In May 2017, the 'Global Action Plan on The Public Health Response to Dementia 2017-2025' was unanimously adopted by WHO's 194 member states at the 70th World Health Assembly.²⁴

NEED FOR THE STUDY

This study addresses two critical aspects of elderly healthcare: the early detection of Alzheimer's disease and the role of physical exercise in improving cognitive health among individuals aged 60 and above in nursing homes. India is experiencing rapid population aging. According to government reports, the number of people aged 60 and above in India is expected to increase significantly, with the elderly population reaching over 300 million by 2050.²⁵

Alzheimer's disease, which is prevalent among older individuals, significantly impacts cognitive health and quality of life. Early detection of Alzheimer's disease can drastically alter the management of the condition and its progression. The signs of Alzheimer's Disease, such as memory loss and cognitive decline, are often not recognized until the disease is more advanced. During muscle work, irisin is produced, plays an important role in neuronal formation, and exhibits anti-inflammatory effects.²⁶

This study could contribute by focusing on the early symptoms of Alzheimer's in the elderly and exploring practical methods for early diagnosis. Identifying Alzheimer's Disease in its early stages allows for interventions that can slow down its progression. Studies have shown that medications and lifestyle changes, including physical activities, are more effective when started early. Alzheimer's disease is a growing concern worldwide, with India expected to have over 7.5 million people affected by 2030. Early detection and intervention are crucial for managing the disease, improving quality of life, and reducing healthcare costs.²⁷

However, Alzheimer's disease is needed because there is no cure, limited treatment, diseases is growing into a global health crisis, major social problem in an aging population like India. Research on caregiver interventions and support systems is essential for sustainable care. Early diagnosis and treatment response: FDA-approved monoclonal antibodies that help remove amyloid-beta and slow progression in early Alzheimer's. Research is also focusing on non-pharmacological treatment; caregivers support culturally appropriate early detection for the Indian aging population.²⁸

OBJECTIVES

1. To assess the early signs and symptoms of Alzheimer's disease among elderly residents using standardized screening tools.
2. To find the impact of treatment approach in Alzheimer's disease
3. To explore the effectiveness of physical exercise and deep breathing techniques in improving early detection of Alzheimer's disease

HYPOTHESIS

- **H₀:** There is a significant relationship between early detection of Alzheimer's disease and improved treatment outcomes among elderly individuals residing in nursing homes at Tumkur.
- **H₁:** Personalized treatment approaches will have a significant positive impact on cognitive function and quality of life among elderly individuals (60+ years) with Alzheimer's disease residing in nursing homes at Tumkur.

RESEARCH METHODOLOGY

The research approach is Quantitative & Interventional Study. The study was conducted in two Old Age Homes and the Retired K.E.B Engineers Association at Tumkur. The sample size was 60, and a

simple random sampling technique was used. The sample size calculation was performed using a computerized calculation.

The study used the Alzheimer's Questionnaire based on the Mini-Mental State Examination (M.M.S.E.) Interview, British Columbia Health Ministry, copyright by Banner Sun Health Research Institute. The Activities of Daily Living (ADL), Alzheimer's Disease Questionnaire, and Impact of Treatment (non-pharmacological approaches such as Simple Physical Exercise, Deep Breathing Technique, and Meditation) tools have been translated into Kannada for easy use by elderly people. Experts modified the tool accordingly and assessed its Content Validity; the research tool was then presented to the research ethics committee for approval of the main study.

METHOD OF DATA COLLECTION:

The researcher has obtained permission from the manager, Shirdi Sai Baba Old Age Home, Mahalakshmi Old Age Home at Mydala, Kyathsandra, Tumkur, and the Retired E.K.B Engineers Association. Data has been collected from 8/5 2026 to 13th May 2026 at three different places. Ethical Clearance was obtained from the Institutional Board, and the research tool was finalized following its presentation to the committee on 27.3. 2026.

RESULTS

The study included older adults aged 60 and above; of these, 62% had normal cognitive function, 32% had mild cognitive impairment, and 2% had Dementia. The impact treatment approaches were non-pharmacological, such as Simple Physical Exercise (10 minutes), Deep Breathing Technique (10 minutes), and Meditation (10 minutes), for a total of 30 minutes. Moreover, physical exercise benefited 54 elderly people (about 90%), deep breathing 45 (about 75%), and meditation 48 (about 80%).

In addition, 77% of older adults were independent in bathing, dressing, and toileting. Moreover, 13 person is about 21%) required mild help, and 1 person about 2% of people) required total help. The study found that 58% had mild Dementia, 27% had moderate Dementia, and 15% had severe Dementia. The other types of Dementia include agitation, behavioural disturbance, psychotic disturbance, mood disturbance, and anxiety disturbance, each about 12%.

The t-value for the relationship between age group and memory loss is $t = 1.9$. Therefore, the H1 hypothesis proved that there is a significant relationship between the aging process and memory loss

Table: 1 Analysis of Socio-Demographic Data of Elderly People

n-60

SL. NO	Socio-Demographic Variables	Frequency	Percentage %
	Age Group		
	a. 60 - 65	12	20%
	b. 65 - 70	10	17%
	c. 70 - 75	10	17%
	d. 75 - 80	13	21%
	e. 80 - 85	11	18%
	f. 85 - 90 and above	4	7%
	Gender		
	a. Male	31	52%
	b. Female	29	48%
	Religion		
	a. Hindu	59	98%
	b. Muslim	1	7%
	c. Christian	0	0%

	d. Others	0	0%
	Marital status		
	a. Single	4	7%
	b. Married	54	90%
	c. Divorced/separated	2	3%
	d. Widowed	0	0%
	Educational Status		
	a. No formal education	13	22%
	b. Primary	11	18%
	c. Secondary	8	13%
	d. Pre-university	4	7%
	e. Bachelor's	13	22%
	f. Postgraduation	11	18%
	g. PhD / Doctor	0	0%
	Family History		
	a. Nuclear family	20	33%
	b. Joint family	39	65%
	c. Extended family	1	2%
	Occupational History		
	a. Employed	3	5%
	b. Retired	17	28%
	c. Unemployed	7	12%
	d. Pensionable	12	20%
	e. Non - Pensionable	21	35%
	Economic Status		
	a. Upper	19	32%
	b. Upper middle	4	7%
	c. Middle	14	23%
	d. Lower middle	3	5%
	e. Lower	20	33%
	Area of Residence		
	a. Urban	30	50%
	b. Rural	30	50%
	Language		
	a. Hindi	1	2%
	b. Kannada	56	93%
	c. English	1	2%
	d. Tamil	1	2%
	e. Telugu	1	2%
	f. Others	0	0%
	BMI		
	a. Underweight 18.5% kg	7	12%
	b. Normal 18.5 to 24.9 kg	29	48%
	c. Overweight 25 to 29.9 kg	15	25%
	d. Obese 30+	9	15%
	Risk / Lifestyle		
	a. No physical Activity	19	32%
	b. History of Diabetes	15	25%
	c. History of HTN	7	12%
	d. Smoking	0	0%
	e. Alcoholism	3	5%
	f. Depression	1	2%
	g. History of Head Injury	0	0%
	h. History of cholesterol	2	3%
	i. Hallucination	1	2%
	j. Delusion	1	2%
	k. Paranoia	1	2%
	l. Incontinence of Bowel / Bladder	2	3%
	m. Forgetting recent events	0	0%
	n. Conversation / events	4	7%
	o. Repeat the questions	2	3%
	p. Social Isolation	2	3%
	q. Misplace the items	0	0%
	r. Poor judgement		
	Sleep Disturbance		
	a. 30 -60 Minutes	10	17%
	b. 2 - 3 hours	5	8%
	c. < 5 hours	11	18%
	d. Mild 6 - 7 hours	22	37%
	e. Moderate 5 - 6	7	12%
	f. Severe less than 5hrs	0	0%
	g. Wakes up in between sleep	9	15%
	h. Sleeps in daytime	6	10%
	Diet		
	a. Vegetarian	45	75%
	b. Nonvegetarian	4	7%
	c. Mixed Vegetarian	11	18%
	Grading of Dementia		
	1. Mild		

	a. Functional impact on daily life	14	23%
	b. Occasional assistance with daily life Activities	12	20%
	c. No longer fully dependent	11	18%
	2. Moderate	11	18%
	a. Excessive functional impact on daily life	8	13%
	b. Frequent assistance with daily life	6	10%
	3. Severe Dementia	4	7%
	a. Complete dependency		
	b. Need Assistance in Basic Activities		
	Other types of Dementia		
	a. Dementia with Agitation	7	12%
	b. Behavioural Disturbance	7	12%
	c. Psychiatric Disturbance	7	12%
	d. Mood disturbance	7	12%
	e. Anxiety Disturbance	7	12%
	Caregiver Interview		
	a. : Person's memory problem with daily Activities	6	10%
	b. Need assistance bathing, eating, dressing, personal care, & walking	7	12%
	c. Need assistance with medication	7	12%

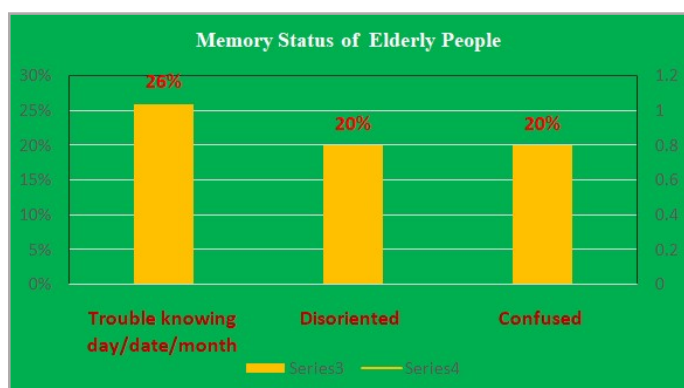


Fig – 1 Analysis of Memory Status of Elderly people

CONCLUSION

- The risk and lifestyle of the elderly people are about 32% with no physical activity, 25% with a history of diabetic and 12% hypertensive, and most of them are on regular medication.
- The cognitive assessment based on "MMSE" reveals that memory loss is about 21%, orientation is 26%, functional ability is about 20%, getting lost in familiar surroundings is about 18%, and decrease sense of direction is 16%, and regarding language, trouble finding words, confusion with family members or friends is about 20%.
- Activities of daily living: 77% of elderly people independently take care, such as bathing, dressing, and toileting. 21% required mild help, and 2% required total help.

RECOMMENDATION

Based on findings of the study, the following recommendations were made:

- Alzheimer's disease elderly people benefited from regular physical exercise, deep breathing, and medication as a non-pharmacological treatment approach.

- A similar study can be replicated with a larger sample size, with pharmacological approaches.
- People with Alzheimer's Dementia required more psychosocial and economic support and good interpersonal communication with family members and caregivers.

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