

Prevention of Dementia in elderly population

WHAT IS DEMENTIA

- Dementia is defined as a slow progressive disease affecting the memory and cognitive ability.
- It is a public health issue which contributes toward the spiraling health-care cost. The World Health Organization (WHO) projected that the number of individuals suffering from dementia over the next 20 years will double globally.
- Dementia is defined as a significant cognitive decline in comparison to the prior performance level in one or more domains (complex attention, executive functions, learning and memory, perceptual social, or motor cognition)

- People with dementia will suffer a cognitive impairment, such as executive function impairment like abstract reasoning, planning, and attention or skilled movements (limb apraxia), or language (aphasia). This process should include a change from previous behaviour such as occupational or social impairing and this cannot be accounted for by other psychiatric conditions such as psychosis, other mood disorders, or depression.

- Dementia is a burden for the world because there is a lot of cases have been recorded in the most countries in the world. There is an urgent for the world to reduce the prevalences of dementia because the number of elderly populations keep increasing and the risk of dementia to happen also increase. People with dementia will experience a more difficult life because they cannot fulfill their own basic needs and will always depend on others.

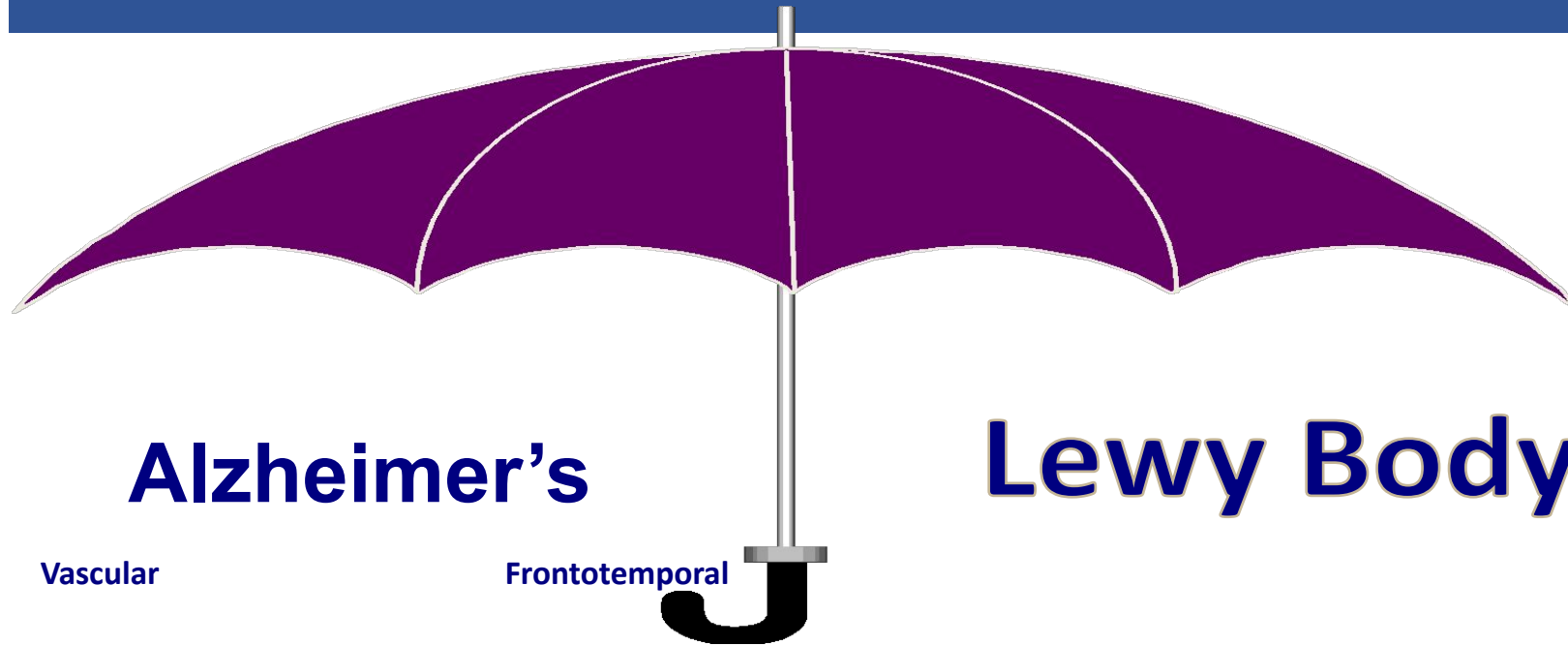
SYMPTOMS OF DEMENTIA

- **Loss of memory** – problems with day to day memory with difficulty recalling events that happened recently
- **Concentrating, planning and organising** – difficulties making decisions , solving problems or carrying out a sequence of tasks
- **Language** – difficulties in understanding what people are saying and or finding the right word for something

Its normal to forget , but sometimes its important to look deeper

- What most people don't know is there are many conditions that can mimic dementia.
- Walking out of ASDA and not remembering where you parked the car is one thing, walking out of ASDA and not knowing if your car is red, green or blue, is something else.

Types of Dementia



Alzheimer's

Vascular

Frontotemporal

Lewy Body

Alzheimers

- Become confused and frequently forget the name of people , places , appointments and important events
- Experience mood swings due to frustration from increasing memory loss
- Become more withdrawn – due to loss of confidence or to communication problems
- Difficulties carrying out every day difficulties
- Cognition generally declines steadily over time
- Caused by proteins that tangle in the brain

Vascular

- Problems with speed of thinking , concentration and communication
- Depression and anxiety accompanying the dementia
- Symptoms of stroke such as physical weakness or paralysis
- Periods of severe acute confusion- prone to delirium
- Tends to progress in a step down presentation
- Caused by vascular events- e.g stroke, damage to blood vessels and restricting blood flow to areas of the brain

Lewy Body

- Experience problems with attention and alertness
- Often have spatial disorientation
- Difficulty in planning ahead and coordinating mental activities
- Shares similar characteristics to Parkinson's disease including slowness , muscle stiffness , trembling and shuffling , changes in voice and lack of facial expression, hallucinations/delusions
- This makes lewy body difficult to diagnose
- Confusion can fluctuate rapidly from very confused to lucid
- Very sensitive to antipsychotic medication
- Can form paranoid beliefs- people stealing from them
- Caused by clumps of proteins that develop inside nerve cells that block messages in the brain. They reduce the levels of chemical messengers and cause nerve cells to die.

Fronto - temporal

- Lack of insight and loss of ability to empathise with others
- More likely to have difficulties with language and emotional responses.
- Become extrovert when previously outgoing and withdrawn when previously outgoing
- Behave inappropriately/impulsive behaviours more likely
- Lose inhibitions- verbally as well as physically
- Can become aggressive
- Develop routines – for example compulsive rituals
- Caused by damage to the frontal/temporal lobes in the brain. Also sometimes referred to as 'Pick's disease'.

The Diagnostic Process

- Multidisciplinary approach that is 80-90% accurate
 - Brain scan, blood and urine tests, hearing/visual exams
 - Neuropsychological testing and interview with caregivers
- The only way to confirm diagnosis is with an autopsy

Stages

Early

- Needs reminders
- Daily routines difficult
- Concentration is difficult

Middle

- **May need hands on care**
- **May get lost easily**
- **Changes in personality**

Late

- **Severe confusion**
- **Needs hand on care for most personal care**
- **May not recognize self or family**

Areas of the Brain Affected

Cognition

- Memory
- Learning
- Language
- Praxic Function
- Abstract thinking
- Psycho-motor speed

Behavior

- Communication
- Safety
- Personal care deteriorates
- Lapses in clarity
- Hallucinations
- Delusions

Emotion

- Disregulated
- Disorganized
- Apathy (loss of energy, willingness)
- Lability (moods change)

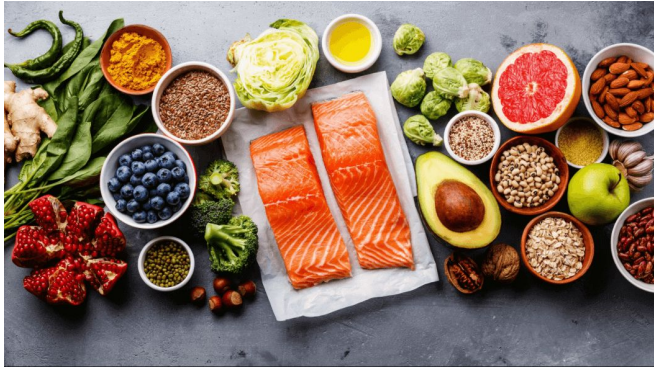
Modifiable risk factors for developing AD

- Up to 1/3 of cases of Alzheimer's disease are related to 7 modifiable risk factors:
 - 4% type II diabetes
 - 7% midlife obesity
 - 7% low cognitive activity
 - 8% midlife hypertension
 - 11% depression
 - 11% smoking
 - 21% physical inactivity

Prevention: does it work?

- FINGER Study from Finland - findings from this study suggest that a multi domain intervention of exercise, diet, cognitive activity and watching BP and cholesterol, may improve or maintain cognitive functioning in at risk older people
- Evidence from a number of studies from UK, Europe and US indicates that comparing 2 groups of older people 10 years apart shows lower incidence of dementia
- This is thought to be due to better control of risk factors, and higher education levels

Prevention



Physical exercise and dementia prevention

- Physical activity is a comprehensive terminology that refers to any movement of the body that compel a person's muscles to work and expend energy.[13] It encloses lifestyle activities such as walking, gardening, household chores, or any incidental movement. Considering it to be a comprehensive term, physical activity also includes planned and structured actions such as exercise or sports. The terminology “exercise” is considerably more detailed and is well defined as a repetitive, structured, or planned physical activity, that helps to maintain and improve physical fitness. It helps to maintain and increase physical as well as mental well-being and quality of life of elderly individuals.

- The WHO recommends that all adults should be engaged for as minimum as 30 min of moderate-intensity physical activity (accrued in bouts for at least 10 min) on 5 or more days in a week.[21] Patients with dementia are also encouraged to get engaged in routine physical activity along with avoiding an inactive lifestyle.

Mediterranean diet and dementia prevention

- This type of diet includes some kinds of behavioral or nutritional recommendations that have been enthused by the lifestyle in addition to food of the coastal regions of the Mediterranean areas in the year 1960. This type of a diet comprises of fish, dairy products, olive oil, plant foods, fresh fruit, whereas processed foods, red meat, and salt should be limited. Some of the cohort studies scrutinized a link between cognitive decline of dementia[30-32] and Mediterranean diet.

- This diet exposure was evaluated with self-recorded food questionnaires, whereas another article described more adherence to the Mediterranean diet accompanied by a risk of progression from cognitively normal persons to MCI.[30] The individuals exposed to the Mediterranean diet were found to have improved scores on the “Mini-Mental State Examination” and demonstrated a lesser amount of decline on a memory test.[32] This mechanism is possibly associated with the role of antioxidants that are found in the diet and its possible association at limiting the reactive oxygen species.

Social engagements

- Social engagement is referred to as maintaining social connections and taking part in social activities. Marital status, contact with friends and family have been used as variables by several evidence to quantify and measure the extent of social engagement plus its relationship with cognitive decline and AD. Many cohort studies in Saudi Arabia, Europe, and US have examined social engagement as a potential risk for the future AD development.[33-36] These studies reveal that prospectively observing populations for many years using self-reported questionnaires suggest that social activities might be protective contrary to developing a cognitive decline. Specifically, failing to cohabitate with life partner or being single has been linked with an amplified risk for dementia; nevertheless, such results cannot be applied to people who are widowed or divorced. Decline in social networking, and activities, and degree of loneliness is thought to be related with a high risk.[37]

Cognitive training

- Mental training and exercises may be considered as a potential solution to enhance the so-called brain reserve in later stage of life.[41] Most of the clinical trials were commenced to examine the cognitive training role in preventing or delaying the considerable cognitive decline.[42] Another study “ACTIVE” is thought to be an influential study which defined the role of cognitive training. This trial successfully examined effects of ten sessions weekly of cognitive exercises after recruiting “2832 elderly people” utilizing four primary tasks: wait-and-see controls, processing, reasoning, and memory. After following up for 5 years, this study showed that certain types of mental actions could help not only on the cognitive performance but also on instrumental daily living activities.[43,44] This task of reasoning was significantly protective contrary to decline in contributory daily living activities.
- Other research articles have examined a multifaceted association between quality of life, depression, and cognitive training. A study conducted by Olazaran[45] demonstrated that cognitive training was thought to be more useful to maintain mood instead of enhancing cognitive capabilities. A SMART trial; therefore, showed that progressively enhancing training levels over the course of time was usually more effective at delaying cognitive decline as compared to utilizing either a standardized or a fixed training regimen.[46]

Vascular risk factors

- Vascular diseases considerably predispose to the progression of dementia, for example, AD or vascular dementia. Thus, the amelioration of such conditions for vascular pathology for instance diabetes, hypertension, and dyslipidemia are considered as an essential target for the prevention of dementia. The association of dementia risk and antihypertensive treatment has been determined by RCT and observational studies.

- A systematic review found that antihypertensive medicines may cause a reduced risk of AD, vascular dementia, and cognitive decline from 19% to 55%. Thus, the antihypertensive treatment effects on the risk of dementia are considerably weaker while only considering RCTs indicating the confounding factors and its presence. Another previously concluded meta-analysis indicated that antihypertensive treatment can lessen the risk for vascular dementia but not cognitive decline or Alzheimer.

- Furthermore, negative results were found while examining the individuals without vascular disease demonstrating that medications that are antihypertensive can be more effectual as a strategy for prevention if targeted at people having higher vascular disease risk. Among antihypertensive medication classes, a strong effect was examined for renin–angiotensin system modulators, that were likely to decrease dementia and cognitive decline risk along with slowing down conversion of MCI to dementia.

- Al Zahrani, Jamaan. (2019). Prevention of dementia in elderly population: A comprehensive review of literature. *Annals of Indian Psychiatry*. 3. 14. [10.4103/aip.aip_60_18](https://doi.org/10.4103/aip.aip_60_18).