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Alzheimer's: A Psycho-Social Concern

By

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Abstract

Alzheimer's disease (AD), the most common cause of dementia, is posing serious threat to public health and health care system in both developed and developing nation due to a rapid increase in the aging population. Alzheimer's slowly destroys an individual's memory, judgment, cognition, learning, and eventually ability to function. Because it impacts a person's mood, thinking, and conduct as well as their entire personality and disposition, it poses a tremendous burden for both the disease's patients and their families. Moreover, along with the psychological factors of the disease, the social factors too cannot be ignored as it affects the patient's social behavior and social interaction often resulting in social isolation. Hence the study aims to explore the relationship between psychosocial factors and risk for Alzheimer's disease and to identify specific psychosocial risk factors among the Indian population

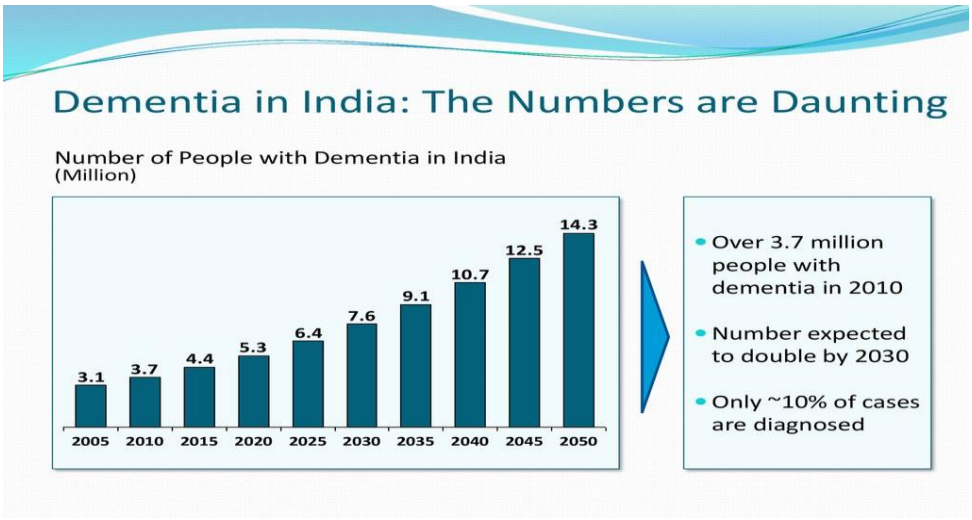
Key Words:Alzheimer's disease (AD), Dementia, Depression, Mood Swing, sleep disturbance, care-givers, social isolation, SDOH

Preamble

In a report released by WHO in 2022, more than 55 million people live with dementia worldwide and there are nearly 10 million new cases every year. Nearly an estimated 6.2 million Americans age 65 and older are living with Alzheimer's dementia by 2021, According to the Census of India 2011; the elderly population (60+) is 104 million that constitutes 8.6% of the total population in India. According to the Dementia India Report 2010 by the Alzheimer's and Related Disorders Society of India (ARDSI), around 3.7 million Indians suffered with dementia in 2010 and the number is projected to reach 7.6 million by 2030. As it can be witnessed from several statistics that there is an upward surge in the elderly population, Alzheimer's disease (AD), the most frequent form of dementia, is posing a severe danger to public health and the healthcare system in both developed and developing countries. Alzheimer's disease gradually impairs a person's memory, judgment, cognition, learning, and ultimately their capacity to operate. AD has physical, psychological, social and economic impacts, not only for people living with dementia, but also for their careers, families and society at large as it affects a person's mood, thinking, and behavior in addition to their overall personality and disposition.

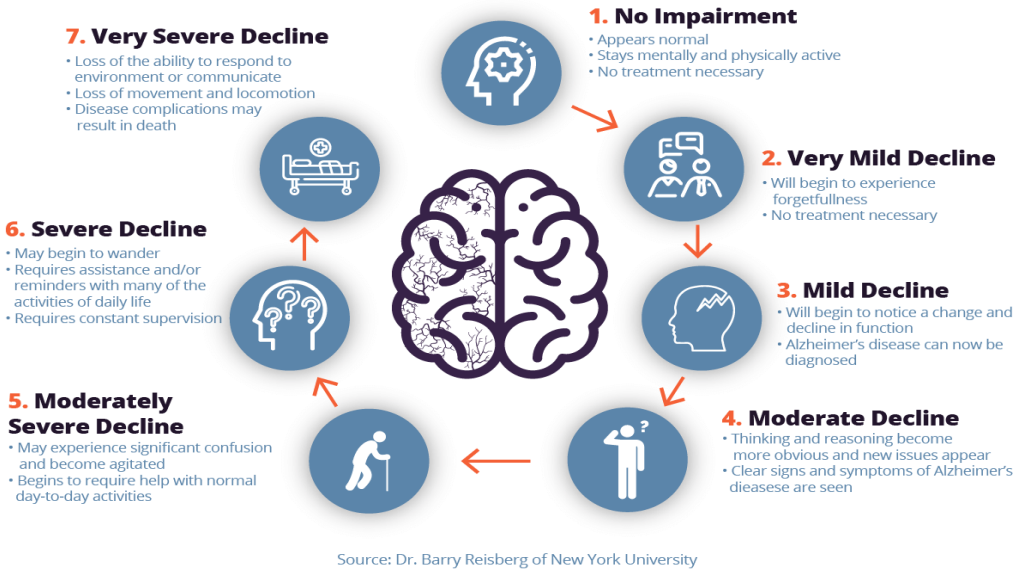
AD can be viewed from scientific, anthropological or socio-cultural frames of reference. From scientific perspective, scientists delve into the causes of and target treatments

for dementia on a cellular level (Heese and Akatsu 2006; Kumari and Heese 2010). The socio-cultural perspective hinges its study on how humans interact with and views dementia, which helps in the development of treatments from a humanistic perspective. Caretaking is becoming a major socioeconomic issue for almost all industrialized countries affected by ageing and associated dementia. As the process of industrialization picking up and the resulting increase in social dynamism, more individuals regard honoring their traditions and their elders as a socio-cultural anachronism, and thus cultural traditions in general, and honoring elders in particular, are becoming less common. Social gerontologists in 1961 put forth the disengagement theory of ageing, which clarified that with ageing there is a tendency to drift away from religious and family chores or activities, that may prove detrimental to physical and mental health (Hooyman and Kiyak 1996) Hence it can be said that this paper shall seek to explore and explain the specific psychosocial risk factors in the Indian population and investigate the association between psycho-social risk variables and risk for Alzheimer's disease.



Stages of Alzheimer's

The seven Clinical Stages of Alzheimer's disease also known as the Global Deterioration Scale (GDS), was developed Dr Barry Reisberg.



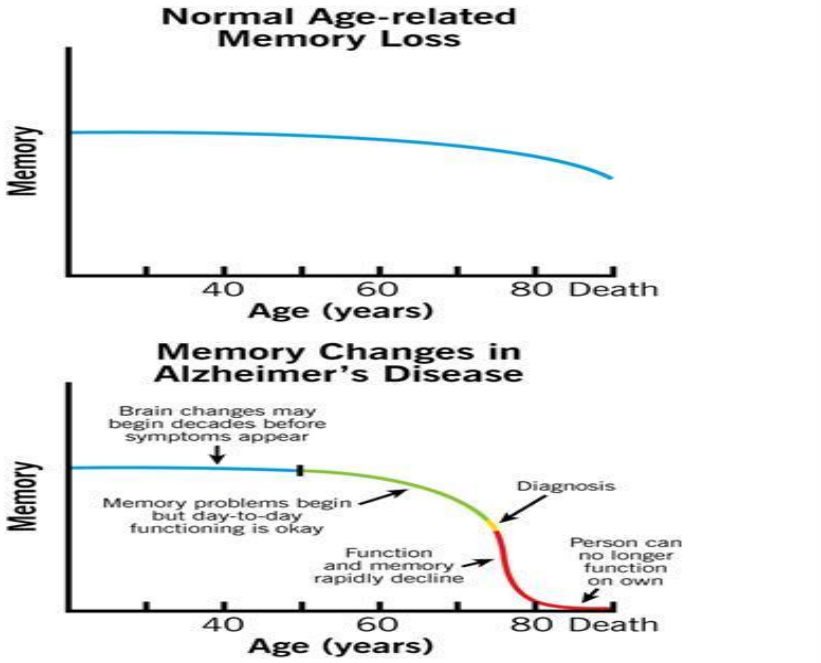
Source: Dr. Barry Reisberg of New York University

Symptoms of Alzheimer's

Under the Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-V), Alzheimer's is classified as either a major or minor neuro cognitive disorder. Its onset is usually insidious and its progression gradual. It is diagnosed following genetic testing to determine a curative genetic mutation from a person's family history. To qualify as a major neuro-cognitive disorder, there must be memory loss is the key symptom of Alzheimer's disease. Early symptoms include having difficulties recalling recent events or discussions. As the disease progresses, memory impairments worsen and other symptoms develop (Albrt et al, 2011; Di Marco et al,2014) At first, a person with Alzheimer's disease may be aware of having difficulty remembering things and organizing thoughts. A family member or acquaintance may be more likely to observe how the symptoms worsen.

Memory

While memory loss is a common occurrence for everyone, Alzheimer's disease memory loss is chronic and worsens over time, making it challenging to complete daily chores at home or work.



People with Alzheimer's may:

- Constantly repeat statements and questions
- Forget conversations, appointments, or events and later forget them
- Frequently misplace possessions, frequently placing them in illogical locations
- Become lost in familiar settings
- Eventually forget the names of family members and common objects
- Struggle to find the right words to describe things, express ideas, or participate in conversations

Reasoning and thinking

Alzheimer's disease causes concentration and thinking challenges, especially when it comes to abstract concepts like numbers. While multitasking, it might be difficult to manage cash, balance cheque-books, and make on-time bill payments. A person suffering from Alzheimer's disease may gradually lose the ability to understand and use numbers.

Making decisions and judgments

With Alzheimer's disease, rational judgment and decision-making abilities decline. One may act out of character or poorly in social settings, or they may dress improperly for the occasion. It could be more difficult to deal with everyday occurrences like food burning on the stove or unforeseen driving conditions.

Preparing for and carrying out routine duties

As the illness worsens, formerly simple tasks that call for sequential processes, such planning and preparing a meal or playing a favorite game, become challenging. At some point, people with advanced Alzheimer's typically lose the capacity to perform simple tasks like getting dressed and taking a bath.

Changes in Personality and behavioral Patterns

Alzheimer's disease causes changes in the brain that might affect mood and behavior.

Problems may include the following (Modrego &Ferr andez, 2004)

- Depression
- Apathy
- Social withdrawal
- Mood swings
- Distrust in others
- Irritability and aggressiveness
- Changes in sleeping habits
- Wandering
- Loss of inhibitions
- Delusions, such as believing that something was taken
- Even as symptoms worsen, many important skills are kept for extended periods of time.

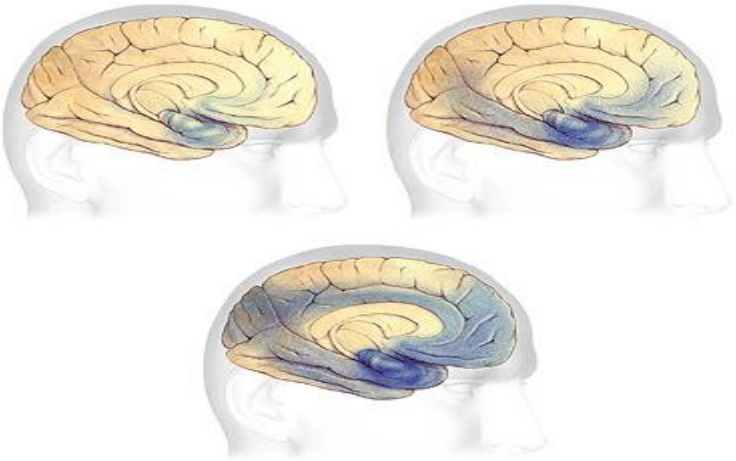
The deficiencies must significantly hinder social or occupational functioning and signify a considerable drop from a prior level of competence. Depression and/or apathy may be present in Alzheimer's patients at the mild stage. Hallucinations (perceptual disturbances), delusions (false beliefs), impatience, agitation, combativeness, and wandering behaviors are examples of moderately severe Alzheimer's psychotic characteristics. Incontinence, convulsions, difficulty in swallowing, abruptly severe gait abnormalities.

Causes

It is unclear what exactly causes Alzheimer's disease. However, brain proteins fundamentally malfunction, interfering with the activity of brain cells (neurons) and starting a series of negative events. Damaged neurons lose their connections to one another and finally die.

According to scientists, a combination of nutritional, environmental, and inherited factors that have a persistently unfavorable impact on the brain most frequently causes Alzheimer's disease Less than 1% of the time, Alzheimer's is brought on by particular genetic abnormalities that almost always result in a person getting the illness. The disease typically begins in middle age as a result of these uncommon occurrences.

The memory-controlling area of the brain is where the damage most frequently begins, but the process starts years before the AD start. Researchers trying to figure out what causes Alzheimer's disease are concentrating on the roles of two proteins:



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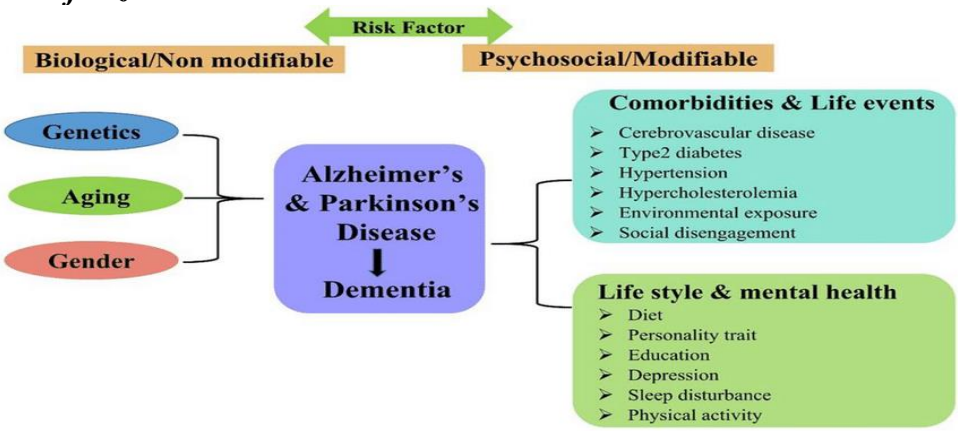
Plaques of amyloid

Beta-amyloid is a small fragment of a larger protein. When these pieces clump together, they appear to be damaging to neurons and to interfere with cell-to-cell communication. Amyloid plaques, which also contain other cellular debris, are created when these smaller clumps merge to form larger clumps.

Tangles in neurofibrillary fibers

Tau proteins are part of the internal support and transport system used by neurons to deliver nutrients and other required components. When tau proteins deform and group together in Alzheimer's disease, neurofibrillary tangles are created. Cells are poisoned by the tangles, and the transport system is disrupted.

Risk Factors of Alzheimer's

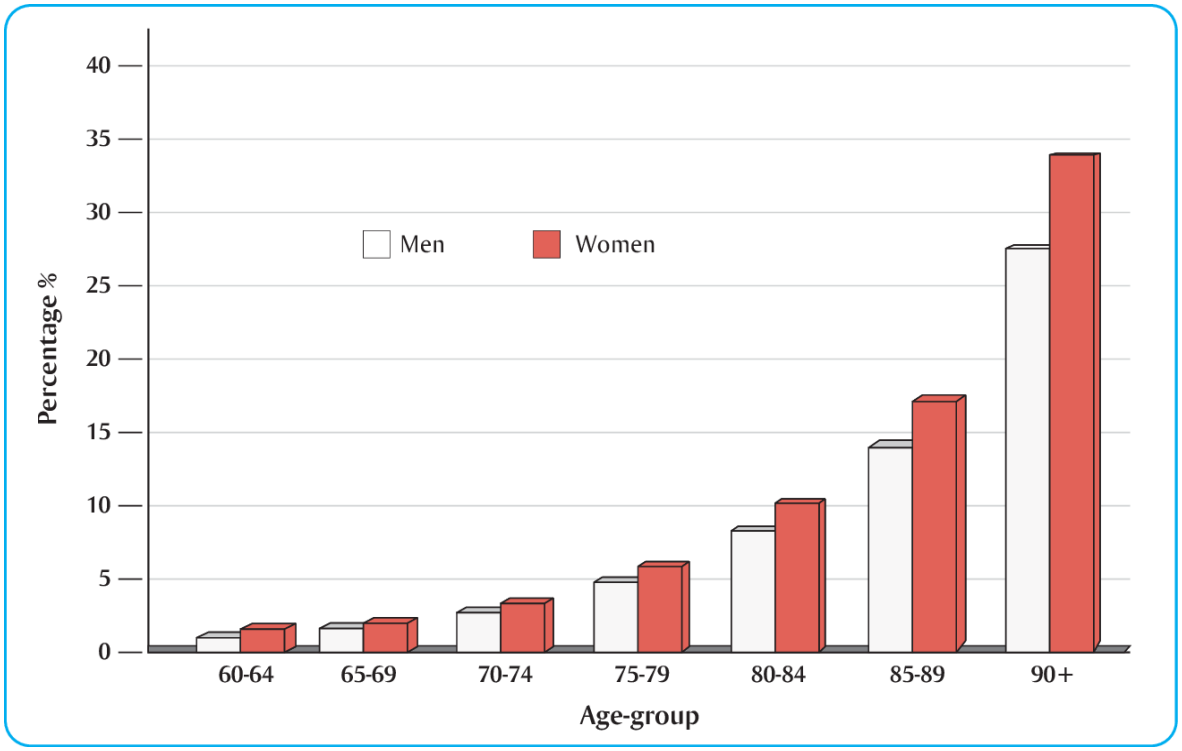


Age

Age is the strongest risk factor for Alzheimer's, although Alzheimer's is not a typical or normal aspect of aging. . Alzheimer's disease affects 5.8 million people in the United States aged 65 and up. Eighty percent of them are 75 years old or older. Alzheimer's disease is predicted to affect between 60% and 70% of the estimated 50 million dementia patients worldwide. The biggest risk factor for developing Alzheimer's is growing older. Although Alzheimer's is not a natural component of ageing, the risk of getting the disease rises with age.

According to one study, there were four new diagnoses per 1,000 persons between the ages of 65 and 74, 32 per 1,000 people between the ages of 75 and 84, and 76 per 1,000 people between the ages of 85 and over each year.

The Dementia India Report 2010 Prevalence, Impact, costs, and services for dementia: A report prepared for the Alzheimer's and related disorders Society of India (Semantic Scholar)



Genealogy and genetics

If your parent or sibling has Alzheimer's disease, your risk of having the condition is somewhat increased. The genetic factors are probably complicated, and the majority of the genetic causes of Alzheimer's disease in families are still mostly unknown. Important factors include genetic predisposition and a family history of Alzheimer's. A person is more likely to get Alzheimer's if a parent or sibling has the condition. The significance of genes like apolipo protein E4 (apo E), amyloid precursor protein (APP), presenilin-1 (PS-1) and presenilin-2 (PS-2) whose mutations can raise your risk of getting Alzheimer's disease is another part of heredity. Additionally, the proteins can disrupt the connections between typically cooperative brain regions by causing structural and physiological issues in the brain.

Down syndrome

Many people with Down syndrome develop Alzheimer's disease. This is probably due to having three copies of chromosome 21, which results in having three copies of the gene for the protein that produces beta-amyloid. In comparison to the general population, people with Down syndrome typically show signs and symptoms of Alzheimer's 10 to 20 years earlier.

Sex

Although there doesn't seem to be much of a risk difference between men and women, because women typically live longer than men, there are more women who have the disease overall.

Mild cognitive impairment

Mild cognitive impairment (MCI) is deterioration in memory or other thinking abilities that is more pronounced than is typical for an individual's age, but the decline does not interfere with the individual's ability to function in social or professional settings.

Dementia is significantly more likely to occur in MCI patients. When memory is the main MCI weakness, dementia brought on by Alzheimer's disease is more likely to develop. An MCI diagnosis urges a stronger focus on healthy lifestyle modifications, creating memory-improvement techniques, and scheduling frequent checkups with the doctor to track symptoms (Donovan et al., 2015).

Head injury

Alzheimer's disease is more likely to affect those who have experienced serious head trauma. It has been demonstrated that patients with traumatic brain injuries (TBIs) who are 50 years of age or older have a higher prevalence of dementia and Alzheimer's disease. More severe and frequent TBIs put a person at greater risk. According to some research, the risk may be greatest in the first six to two years following a TBI (Becker et al,2011; Jagust ,2014).

Air toxicity

In investigations on animals, it was discovered that air pollution particulates accelerated the degeneration of the nervous system. The risk of dementia is also increased by exposure to air pollution, notably that from burning wood and car emissions, according to human studies.

Use of Excessive alcoholic beverage

The brain chemistry of people who drink a lot of alcohol has been found to be affected. In a number of important studies and reviews, it was discovered that alcohol use disorders were linked to a higher risk of dementia, especially early-onset dementia.

Poor sleeping habits

According to study, poor sleep habits, such as difficulty falling or staying asleep, are associated with an increased risk of Alzheimer's disease**.**

Lifestyle and heart health

Research has shown that the same risk factors associated with heart disease may also increase the risk of Alzheimer's disease (Diniz, Butters & Renolds). These include:

- Poorly Lack of exercise
- Obesity
- Smoking or exposure to secondhand smoke
- High blood pressure
- High cholesterol
- controlled type 2 diabetes

These factors can all be modified. As a result, modifying your living behaviors can reduce your risk. Regular exercise and a healthy low-fat diet rich in fruits and vegetables, for example, are linked to a lower chance of acquiring Alzheimer's disease.

Lifelong learning and social engagement

According to research, engaging in mentally and socially difficult activities throughout one's life can reduce one's risk of developing Alzheimer's disease. Low education levels — less than a high school diploma — appear to be a risk factor for Alzheimer's disease.

Complications

Alzheimer's disease can make it more difficult to treat other medical diseases due to cognitive changes such as loss of memory and language skills, decreased judgment, and others. Alzheimer's patients may not be able to:

- Communicate that he or she is experiencing pain
- Explain symptoms of another illness
- Follow a prescribed treatment plan
- Explain medication side effects

When Alzheimer's disease reaches its final stages, alterations in the brain start to have an impact on bodily processes like swallowing, balance, and bowel and bladder control. These outcomes may make people more susceptible to developing new health issues like:

- Inhaling food or liquid into the lungs
- Flu, pneumonia and other infections
- Falls
- Fractures
- Bedsores
- Malnutrition or dehydration
- Constipation or diarrhea
- Dental issues like mouth sores or tooth decay

Late-life dementia risk factors related to psychosocial factors from a number of longitudinal population-based studies, it has lately become clear that psychosocial factors are important in determining dementia risk. According to studies, there are three stages of life where psychosocial elements are active: early life (education and socioeconomic position); adulthood (job stress and work complexity); and late life (life style including leisure activities and social network). Elderly dementia is linked to long-term psychological suffering, although the cause of this connection is unclear.

Preventive Measures

- Protect your brain as you age. According to studies, life-long learning exercises and other tactics can be beneficial.
- Enhance your memory.
- If you have mild memory loss, there are strategies you can use to adopt and overcome the challenges.
- Reading or listening to books, remembering, singing, dancing, dancing to music, drawing, or making crafts are a few examples of talents that can be preserved because the brain regions that govern these skills are compromised later in the disease's course, they may be preserved for a longer amount of time.

Psychological Testing for Alzheimer's

Psychologists are looking for methods that detect Alzheimer's disease before symptoms develop. To be effective, the current Alzheimer's drug must be given early in the disease's progression. But how can the disease be detected before it's too late? Psychologists have identified several promising tests:

Test of paired associate learning

In this test, participants must recall both unrelated and linked word pairings. The associated word pairings are generally simpler for most individuals to remember.

Task for Perceptual Identification

During this exam, participants read words aloud as they momentarily appear on a computer screen. A sense of familiarity that should enable test-takers to read certain words more quickly is tested by having researchers repeat selected words repeatedly. The Amsterdam researchers discovered that priming is ineffective for those who are at high risk of Alzheimer's development. That suggests that these people aren't studying as effectively as they ought to.

Test of Visual Association-

People attempt to recall line drawings that have been illogically linked with other objects in this exam. Failure to pass this exam indicates episodic memory issue.

The Task of Dichotomous Listening

In this test, two streams of information are being heard through headphones, one flowing to the left ear and the other to the right ear. According to a study from the Alzheimer's Disease Research Center at Washington University, people with early dementia retain information better when it is delivered to the right ear. The default pathway for information processing is through the right ear. According to the study, it becomes more difficult for patients to divert their attention away from the typical pathway and toward their left ears as dementia worsens. As a result, the test is a reliable indicator of Alzheimer's early on.

Psychologist are also figuring out certain tests aren't as good at predicting Alzheimer's disease. According to the Amsterdam researchers, the regularly used Mini Mental Status Exam, is not as helpful as other tests in predicting who may get Alzheimer’s. The test can only distinguish between normal aging and Alzheimer’s when dementia is already in a more advanced state.

Medical Test for Alzhiemer

Brainimaging

A typical medical examination for Alzheimer's disease frequently involves structural imaging using MRI or computed tomography (CT). These examinations are largely performed to rule out other illnesses that might present with symptoms similar to Alzheimer's but call for different medical care. Tumors, signs of small or big strokes, damage from severe head trauma, or an accumulation of fluid in the brain can all be seen with structural imaging.

In rare cases, a clinician may utilize brain imaging equipment to determine whether a patient has high levels of beta-amyloid, a sign of Alzheimer's disease; low levels would indicate dementia caused by a different condition. Our knowledge of the composition and operation of the living brain has been fundamentally altered by imaging technologies.

Testing for cerebrospinal fluid (CSF)

The brain and spinal cord are covered and cushioned by CSF, a transparent liquid. Adults typically have one pint of CSF, which doctors can take a sample of using a minimally invasive technique called a lumbar puncture, sometimes known as a spinal tap. According to research, the CSF levels of several markers, including tau and beta-amyloid, two markers that generate aberrant brain deposits strongly associated to Alzheimer's, may fluctuate in the early stages of Alzheimer's disease. Neurofilament light (NfL), whose level has been reported to rise in neurodegenerative illnesses like Alzheimer's, is another potential indication.

The measurement of biomarker levels in the same sample can frequently change dramatically from one institution to another and across various testing platforms. The measurement of these markers in clinical care and research has advanced significantly. Dementia specialists now employ CSF testing to help with Alzheimer's diagnosis, and research is ongoing to identify and standardize additional indicators that will help with diagnosis and detection of other dementias.

Clinical professionals can now employ a new diagnostic tool called Lumipulse, a CSF Amyloid Ratio test, to find amyloid in CSF, which may be a sign of amyloid alterations in the brain.

Blood test

The blood levels of particular markers are being monitored by researchers to see if they may accurately predict changes connected to Alzheimer's disease. These biomarkers, which can be evaluated both before and after symptoms manifest, may include tau, beta-amyloid, or other molecules.

To diagnose the illness, there is an urgent need for straightforward, affordable, non-invasive, and readily accessible diagnostic methods like blood testing. By assisting in the identification and monitoring of treatment efficacy in clinical trial participants as well as increasing the likelihood of early discovery, diagnosis, and intervention, these testing tools would improve medication development. A blood test would also make it possible to evaluate and comprehend how Alzheimer's disease develops in broader and more diverse populations.

Blood tests are currently used in several specialist care facilities and are enhancing clinical trial design. They are extremely likely to completely change how dementia, including Alzheimer's, is diagnosed in the future. Because much more research is still required before these tests can be regularly used in clinics and because researchers are still working to develop standardized and validated tests that will provide reliable results for all individuals, the use of these tests in trials and at the doctor's office must be done in a careful and controlled manner.

There are a few blood tests available on the market that doctors can request to help with the diagnosis of memory issues. The FDA has not yet approved these tests. Blood testing should currently only be administered by specialists who are treating people with memory issues. They are not advised for people who do not exhibit any memory or cognitive problems.

The currently available tests can identify whether the brain has amyloid alterations, neurodegenerative illness, or neuronal damage. These blood tests will be used in conjunction with other diagnostic procedures to help determine the presence of Alzheimer's disease or any other form of dementia.

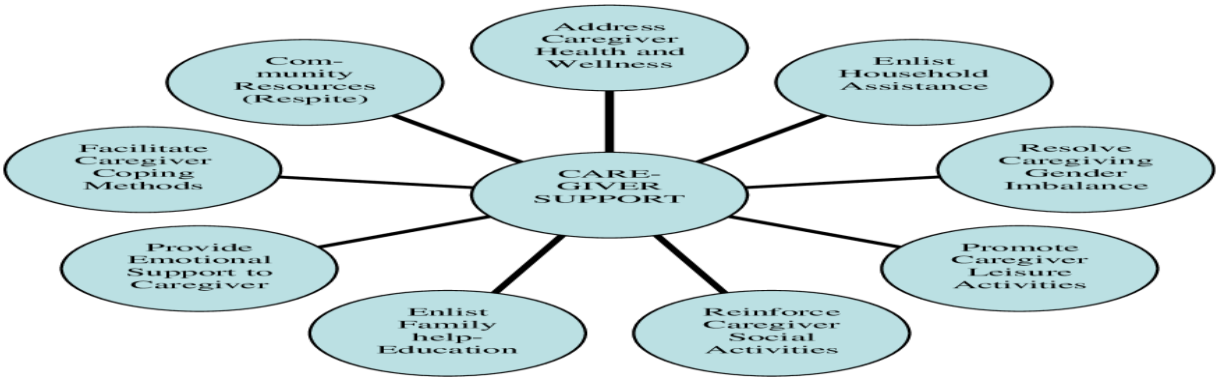
Treatment

Alzheimer's disease cannot be treated and its effects cannot always be reversed, therefore its course cannot be slowed down. To improve a person's quality of life and lessen the effects of the illness' most distressing elements, symptoms might be targeted. A class of medications known as cholinesterase inhibitors is used to treat problems associated with memory, thought, language, judgment, and other mental processes. There are three cholinesterase inhibitors that are frequently prescribed: Rivarligmine (Exclon) and donepezil (Aricept) are licensed to treat mild to moderate Alzheimer's, respectively. Alzheimer's disease that is mild to severe can be treated with galantamine (Razadyne). The FDA has authorized memantine (Namvhhenda), a different type of drug, for the treatment of moderate to severe Alzheimer's disease (Poirier,Miron 2014).

The management of the patient's behavioral issues, disorientation, and agitation; altering the home environment; and providing family support may also be the focus of treatment. Confusion-causing underlying conditions should be found and treated as well. Some patients may benefit from behavior modification to control undesirable or hazardous behavior.

Social Support

Social Support is an umbrella term for a trusted network of family, friends, neighbors and community members that is available in times of need to offer psychological, physical and financial help. As per the need and requirement, caregivers can be categorized into “formal care-givers, healthcare professionals, and “informal care-givers” or “unpaid caregiver”, usually family and close friends. In other words, it can be said Alzheimer disease is a chronic disease which needs perennial care which can be provided by relatives and healthcare professionals, but society as a whole has a vital role to play for caring of the patients



The above diagram depicts social support for Care Givers of Alzheimer’s Patients.

Conclusion

It can be largely inferred that low levels of education, poor cognitive function, poor vocational position, a lack of social contact and leisure activities, and poor wellbeing were all identified as psychosocial risk factors in research. Although psychological risk factors are

significant, we continue to believe that biological factors are the primary cause of AD. Or, to put it another way, psychosocial risk factors fan the flames of biological risk factors. However, along with the psychological factors of Alzheimer's there is a need to strengthen and improve upon the social determinants of Health (SDOH) like education, access to health care, built environment, loneliness and social isolation for better outcome. Along with the recognized risk factors for AD, there are still questions about the connection between psycho-social risk factors and AD.

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