

Diagnosis and Treatment Methods in Alzheimer's Patients Based on Modern Techniques: The Original Article

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DOI: 10.47750/pnr.2022.13.S01.226

Abstract

Alzheimer's disease is one of the problems that usually affects the elderly and causes memory problems. In order to determine the appropriate method of Alzheimer's treatment, first this complication must be accurately diagnosed. To diagnose this condition, the doctor uses various tests to rule out the possibility of other diseases. In this study, the ways of diagnosing the disease such as MRI and other methods are described and the methods of Alzheimer's treatment (pharmacological and non-pharmacological) are reviewed. In this study, by examining 121 samples of patients with Alzheimer's, recommendations have been made regarding the care of Alzheimer's patients. The results showed that memory loss is the first sign of Alzheimer's. Usually, a person with memory problems does not notice the occurrence of this problem, and friends and family members find out about this problem. The occurrence of problems in short-term memory is common in the sixth and seventh decades of life; But it does not mean the occurrence of Alzheimer's. Normal memory problems are different from the type of memory problems caused by Alzheimer's.

Keywords: Alzheimer's, Memory, Disease Treatment, Medicine.

INTRODUCTION

Alzheimer's disease is included in the category of dementia. In short, dementia is a disease that destroys brain tissue [1-3]. Alzheimer's disease mainly occurs in elderly people and causes the formation of symptoms such as a decrease in cognitive function, memory, speech and finally sensory and movement problems in a person [4-6]. But the onset of symptoms varies depending on the cause. For example, the beginning of these changes may be gradual or sudden, or there may be a gradual decline in performance. Neurological research has shown the best Alzheimer's doctors; degenerative diseases of the brain tissue such as Alzheimer's and Parkinson's disease, which may cause dementia at a younger age in people, occur more often in people who have a higher genetic load [7-9]. Of course, in these people, other risk factors may play a role in the age of onset or (Figure 1) exacerbation of the disease [10]. In general, the course of the disease can be divided into three parts in most cases, which are:

1. Primary (including 1-2 years of elementary school);
2. Intermediate (including 2 to 5 years);
3. Advanced (5 to 20 years).

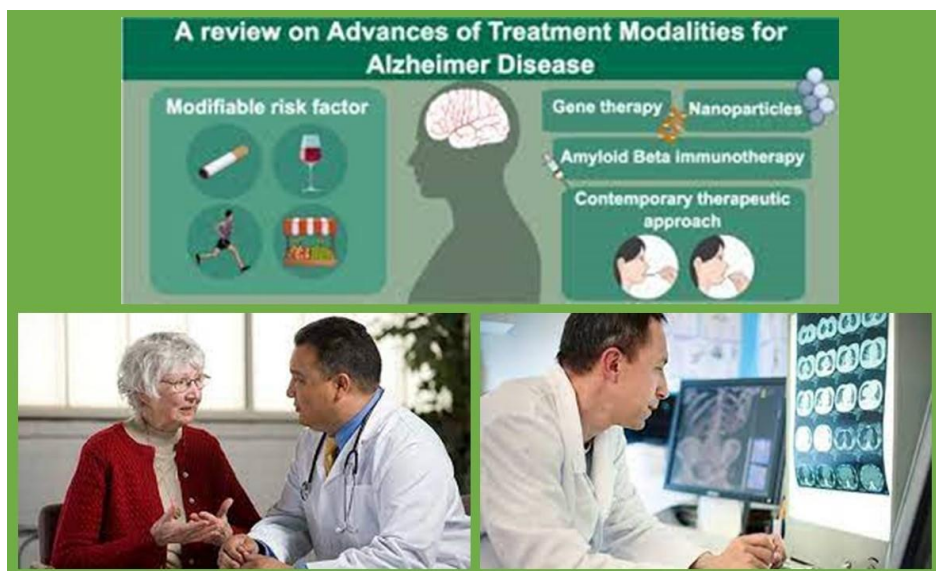


Figure 1. Diagnosis and Treatment Methods in Alzheimer's Patients

The following are also noteworthy:

- People who get Alzheimer's disease in middle age is mostly due to genetic background.
- Trauma and concussions are also one of the main causes of Alzheimer's disease [11-13].
- It should be noted that the risk of Alzheimer's disease is higher in women than in men.

Alzheimer's disease is caused by changes in the brain. Some of the symptoms of this condition may be related to the loss of chemical messengers in the brain (neurotransmitters). These messengers enable the correct communication of nerve cells in the brain [14].

The following two things are not normal in the brains of people with Alzheimer's:

- Amyloid plaques are clumps of protein called beta amyloid. These plaques accumulate around cells that are connected to each other in the brain [15].
- Neurofibrillary tangles are composed of a protein called tau. Normally, this protein helps cells in the brain communicate. As a result of Alzheimer's, tau proteins accumulate in the form of masses and some nerve cells are destroyed. In this case, it becomes more difficult to establish communication in the brain.

With the death of brain cells, the brain atrophies and over time brain damage causes problems related to memory, intelligence, judgment, language and behavior. Doctors don't know if amyloid plaques and neurofibrillary tangles are side effects of Alzheimer's or if they are the cause of the disease [16-18].

Search strategy and selection of articles

Search in Scopus, Google scholar, PubMed databases and by searching with keywords such as " Analysis of Alveolar Crestal Bone" and " Cantilever Base Implants Using Scientific Sources" and "Fracture Problems" and "Special Care Unit" to obtain articles related to the selected keywords [19-21]. Case report articles, editorials, and articles that were not published or only an introduction of them were available, as well as summaries of congresses and meetings that were in languages other than English, were ignored. Only the original research articles that evaluated the effectiveness of different drugs in the treatment of COVID-19 using standard methods were studied (figure 2).

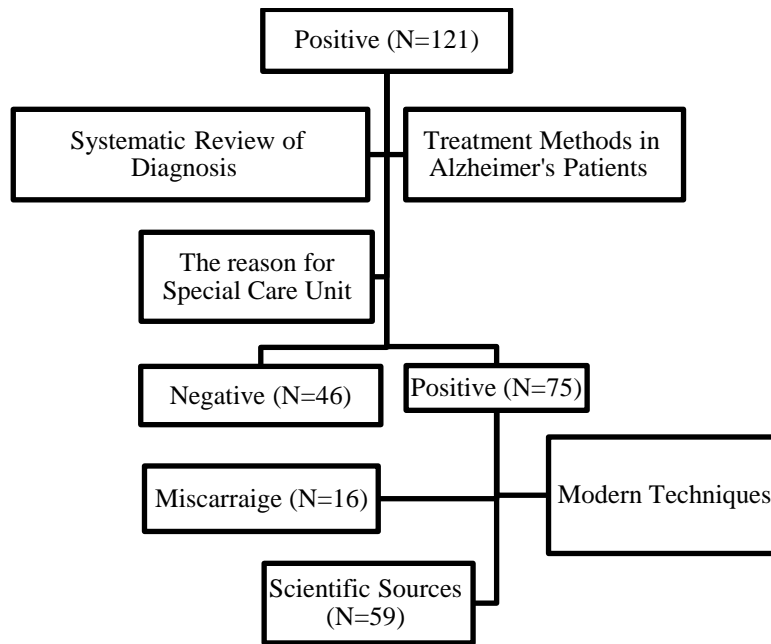


Figure 2. Flow chart of included subjects

What are the signs and symptoms of Alzheimer's? For example, in a normal state, a person may forget the following:

- Part of an experience;
- Car parking place;
- Names of people.

As a result of Alzheimer's disease, the following may occur

- Forgetting the whole experience;
- Forgetting the appearance of one's car;
- Forgetting a certain person completely.

Alzheimer's stages

Alzheimer's is a progressive disease. This means that the symptoms of Alzheimer's disease gradually worsen over time. Alzheimer's is divided into 7 different stages (Figure 3):

- First Stage: At this stage there are no symptoms, but early diagnosis may be possible based on family history [22].

- Second stage: The first symptoms of Alzheimer's appear, such as forgetfulness.
- Third stage: Mild physical and mental disorders, such as reduced memory and concentration [23].
- Fourth Stage: Alzheimer's is often diagnosed at this stage, but it is still mild; which is manifested by memory loss and inability to perform daily tasks.
- Fifth stage: Alzheimer's disease symptoms appear as moderate to severe, and the person needs help and care [24].
- Sixth Stage: In this stage, a person with Alzheimer's may need help with basic tasks such as eating and dressing [25].
- Seventh stage: This stage is the most severe and the last stage of Alzheimer's. Complete loss of speech may occur. In this section, some symptoms of mild, moderate and severe Alzheimer's disease are described. Symptoms change as the disease progresses. If any of these symptoms occur in family members, you should see a doctor [26].

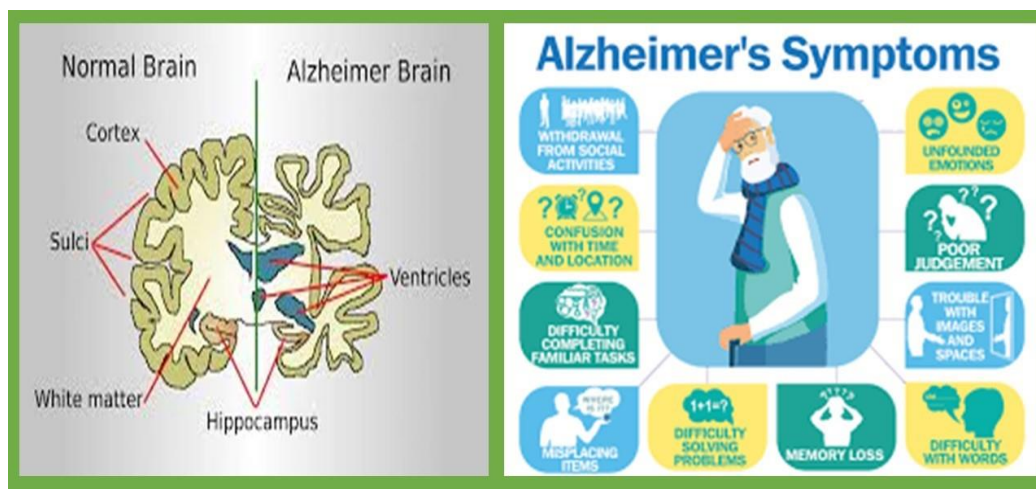


Figure 3. Alzheimer's stages

Mild type of Alzheimer's disease

People with mild Alzheimer's usually have the following symptoms:

- Avoiding being in new and unfamiliar situations;
- Delay in reactions;
- Difficulty in learning and remembering new information;
- Slowing down the conversation initiation process;
- Wrong judgments and wrong decisions;
- Mood swings, depression, moodiness and restlessness.

These symptoms are usually more obvious in new situations [27]. In this case, mild cognitive impairment occurs in some people. People with this condition are more prone to Alzheimer's or other types of dementia. Of course, dementia does not occur in all people with mild cognitive impairment [28].

Moderate type of Alzheimer's disease

People with moderate Alzheimer's have the following symptoms:

- Difficulty recognizing friends and family members;
- Intensification of restlessness, especially in the afternoon and at night;
- Difficulty in reading, writing and working with numbers;
- Difficulty in dressing;
- Difficulty doing daily tasks such as cooking or paying bills;
- Difficulty in making decisions;
- Confusion in connection with the correct detection of time;
- Getting lost in familiar places;
- Difficulty finding the right words in conversation [29].

Severe Alzheimer's disease

People with severe Alzheimer's have the following symptoms:

- Forgetting how to bathe, feed or dress without help from others;
- Difficulty maintaining balance or walking and the possibility of falling to the ground;
- Intensification of confusion in the afternoon and difficulty in sleeping;
- Inability to use words to communicate;
- Loss of bowel or bladder control [30].

Diseases with Alzheimer's symptoms

In the early stages of Alzheimer's disease, fine motor skills (such as the ability to button clothes or use kitchen utensils) or the sense of touch are usually not affected. Therefore, the presence of movement symptoms such as weakness or hand tremors or sensory symptoms such as numbness can indicate the presence of a disease other than Alzheimer's [31-33]. For example, a disease like Parkinson's may cause movement symptoms along with dementia. Other complications that have symptoms similar to Alzheimer's disease include:

- Dementia caused by vascular dementia;
- Thyroid-related problems such as hypothyroidism or hyperthyroidism;
- Depression;

- Problems such as kidney or liver diseases and infections such as HIV.

Preliminary tests

The doctor evaluates the health status of the patient and uses a physical examination to ensure that the symptoms are not caused by other physical complications. Sometimes, other problems can cause the symptoms of Alzheimer's disease [34-36]. Also, the functional status of the patient and his mental health are also checked. During these tests, in order to check memory and other mental skills, the doctor asks the patient to perform simple tasks. How to do daily things are also evaluated by the doctor [37].

Laboratory tests

These tests are used to rule out the possibility of other problems and complications. These problems include levels of certain minerals or chemicals in the blood, liver disease, abnormal thyroid levels, or nutritional problems such as folate or vitamin B12 deficiency (Figure 4). Treatment of these complications can delay the process of dementia [38].

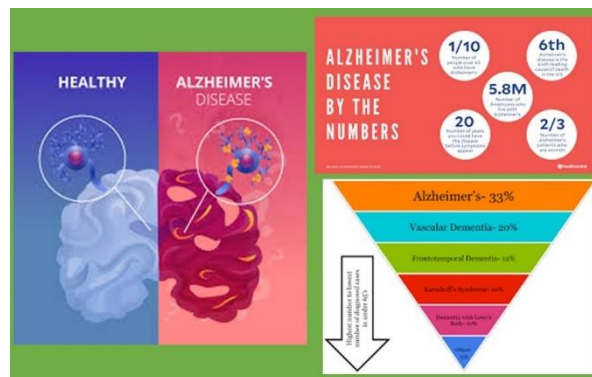


Figure 4. Alzheimer's Disease

The blood test includes the following:

- Complete blood cell count;
- Liver function test;
- Folate test (folic acid);
- Check vitamin B12 level;
- Evaluation of blood glucose and electrolytes (Sodium, Potassium, Creatinine, Glucose, Calcium);
- Thyroid function test;
- HIV test.

Other tests

Other tests include the following:

- Brain imaging test such as CT scan or MRI of the head;
- Lumbar puncture to check the presence of some proteins in the spinal fluid;
- EEG;
- Brain imaging studies including positron emission tomography (PET) and single photon computed tomography (SPECT) [39-41].

In some cases, it is possible to evaluate the brain after the patient's death if the family members want to confirm and prove the presence of Alzheimer's disease in the patient [42].

Drug treatment of Alzheimer's

Currently, there are drugs in several different categories for the drug treatment of Alzheimer's disease, which in some cases slow down the progress of the disease and improve a person's performance, which, of course, must be prescribed by a neurologist. Controlling behavioral and mood changes using psychiatric drugs is very effective [43-45]. As controlling the risk factors of cardiovascular diseases such as controlling sugar, pressure, blood lipids and controlling ischemic insufficiency and stroke and controlling kidney function play a significant role in preventing Alzheimer's disease, affected people should also be under the supervision of a doctor and medical care.

Non-pharmacological treatment of Alzheimer's mainly includes rehabilitation interventions such as physiotherapy, occupational therapy, psychology, nutrition, speech therapy and education of patients' families and caregivers by experienced specialists.

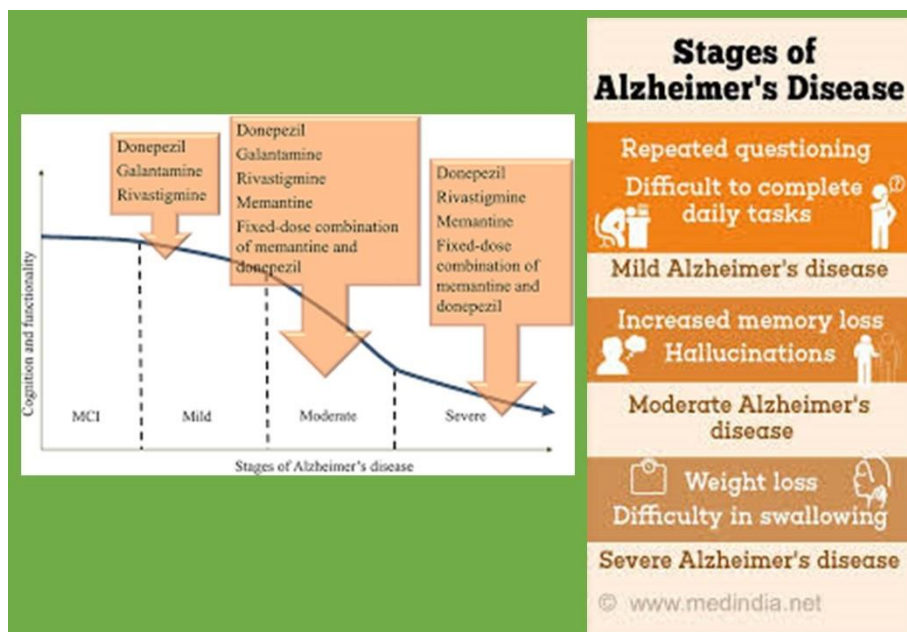


Figure 5. Non-pharmacological treatment of Alzheimer's

The best Alzheimer's doctor you know, as well as psychiatrists and geriatrics specialists, are three groups of specialists to whom the elderly with early diagnosis of Alzheimer's can be referred for final diagnosis.

Transcranial Magnetic Stimulation is a non-pharmacological and non-invasive, painless treatment method with rapid brain stimulation that can be used to improve the symptoms and treat a wide range of brain and neurological diseases including Alzheimer's disease, depressive disorder, obsessive compulsive disorder and migraines.

Management of Alzheimer patients

The management of Alzheimer's patients is multi-staged and guided by the stage of the disease. You should also focus on the specific symptoms that appear. At each stage, the neurologist, who should also be the best Alzheimer's doctor, vigilantly helps the patient and family to predict the symptoms and necessary care in the future. Cognitive and non-cognitive disorders and functional changes should be evaluated compared to the initial level. In patients with multiple problems, treat the most dangerous or distressing problems first. The health of selected treatments and solutions should be considered frequently [46].

However, it is possible to increase social activity, start pleasurable activities, eliminate tasks that cause conflict or frustration, for example, activities that the patient can no longer do, determine rewards for even small successes, remove any triggers for behavioral problems or providing everything that makes the patient comfortable; For patients diagnosed with Alzheimer's disease, the doctor should suggest regular exercise (twice a week) as part of the overall treatment management approach. Cognitive rehabilitation may also be recommended in these patients. Patients should be periodically evaluated in terms of cognitive and non-cognitive psychiatric symptoms and their response to treatment measures. Periodic evaluation is recommended at least every 3 to 60 months, unless the patient has complex and potentially dangerous symptoms or has suffered a severe decline [47].

Also, avoid stopping the drug suddenly because it may aggravate the side effects of stopping and cause a disturbance in the patient's level of consciousness. When the decision to stop the drug is made with the opinion of a neurologist, it is suggested that the drug be gradually reduced and then stopped. If the discontinuation was due to the ineffectiveness of the drug, the patient should be observed for visible evidence of cognitive-functional, behavioral decline in 1 to 3 months after stopping the drug. If a drop occurs, it is suggested to start the drug again.

The importance of nutrition in preventing Alzheimer's disease

Nutrition throughout life, from fetal period to old age, can affect the risk of Alzheimer's disease. Low birth weight and low growth in the early years of life are associated with lower cognitive ability in adulthood. Obesity in middle age is associated with an increased risk of Alzheimer's disease in old age [48].

Therefore, its prevention and treatment is recommended in middle age, but in old age, excess weight reduces the risk of Alzheimer's disease, in the elderly, weight loss is not recommended except in special circumstances [49]. In case of weight loss or low weight in the elderly, it is necessary to consult a doctor. According to the available evidence, following a Mediterranean diet reduces the risk of Alzheimer's disease. In the Mediterranean diet, the main food consumed throughout the day includes whole grains, vegetables, fruits, legumes, nuts, healthy oils such as olives, and spices [50].

Fish and seafood are used at least twice a week. While red meat and sweets are rarely consumed. Water is also a common drink in this diet. In general, it is recommended to follow a healthy diet and prevent nutritional deficiencies by focusing on vitamins B12, B6, folic acid, vitamin C and omega-3 fatty acids. Therefore, the best way to deal with this disease is to prevent its occurrence. If you want to reduce your risk of developing Alzheimer's disease and other types of dementia, we recommend including the following foods in your diet:

Berries: Studies have shown that children ages 8 to 10 who regularly eat strawberries, blueberries, or blueberries have better memory in adulthood. A study published in 2013 also found that participants who consumed more berries experienced slower cognitive decline as they aged [51].

Coffee (Caffeine): Intake of caffeine through drinking coffee is associated with a reduced risk of developing mild cognitive

impairment. Studies have shown that brain alertness increases as soon as caffeine is consumed.

Green leafy vegetables: These types of vegetables, such as spinach and lettuce, contain vitamins (such as folic acid) and minerals that boost brain function. B12 and folic acid reduce amino acid levels in the blood that are often high in people with Alzheimer's disease [52]. In a 2018 study of adults aged 58 to 99, eating green leafy vegetables made them appear cognitively younger by the equivalent of 11 years. Another study published in 2005 showed that the risk of dementia is reduced in people who have a diet containing these types of vegetables [53].

Nuts: Several studies have linked nut consumption to a reduced risk of dementia. Some researchers have also proven the improvement of memory and brain recall in people whose cognitive function is normal. Another study on mice, published in 2014, shows that walnuts can even improve memory in people with Alzheimer's disease. However, it is important to note that this study was not conducted on humans [54].

Some types of cocoa or chocolate: Chocolate is one of the most delicious foods to reduce the risk of dementia. According to a 2017 study, regular consumption of cocoa, especially dark chocolate, is associated with a reduced risk of cognitive decline [55].

Fish: Getting omega-3 fatty acids found in certain types of fish, such as salmon and mackerel, is very beneficial for brain health, and most researches agree on this.

Cinnamon: Several studies have shown that the consumption of cinnamon in the form of spice or tea is related to improving the cleaning of the accumulation of brain proteins in Alzheimer's patients, as well as improving memory and other cognitive functions. In addition, cinnamon is associated with antioxidant and anti-inflammatory benefits. As a result, it is effective in improving brain health by helping to maintain heart health and lowering blood pressure [56].

Turmeric: Turmeric contains an effective active ingredient called curcumin. Studies have proven that this substance can greatly help prevent and treat types of dementia such as Alzheimer's.

Mediterranean diet: Consuming a Mediterranean diet rich in vegetables, especially olives, is strongly associated with improved cognitive function and reduced risk of dementia. The food we choose is also related to the health of our body and brain, and maintaining our health is a gift that benefits us and our loved ones [57].

General principles of management for the treatment of Alzheimer patients

Alzheimer's treatment in the elderly, which ranks as the sixth leading cause of death in the United States, is one of the major concerns of the medical community. Some say this disease is the third leading cause of death in the elderly after heart disease and cancer [58].

Alzheimer's disease is a brain disorder that slowly destroys memory and thinking skills and ultimately the ability to do the simplest tasks. What is Alzheimer's disease in the elderly? Alzheimer's is the most common cause of dementia among people, and the treatment of Alzheimer's in the elderly is a big challenge in today's world. Dementia is the loss of cognitive function (thinking, remembering, and reasoning) and behavioral abilities to the extent that it interferes with a person's daily life and activities [59]. The severity of the disease varies from the mildest stage, when it just begins to affect a person's functioning, to

the most severe stage, when the person must be completely dependent on others to perform basic activities of daily living. Alzheimer's treatment in the elderly will vary depending on the type of brain changes that occur.

Some dementias include: Lewy dementia, frontotemporal disorders, vascular dementia, usually people have mixed dementia, that is, they experience a combination of two or more types of dementia at the same time. For example, some people have both Alzheimer's disease and vascular dementia [60]. The factors influencing the formation of Alzheimer's disease are not fully understood. But at the initial level, brain proteins do not function normally and the work of brain cells (neurons) is disturbed. Neurons get damaged, lose communication with each other and eventually die.

Scientists believe that for most people, Alzheimer's disease is caused by a combination of genetic, lifestyle and environmental factors that affect the brain over time. In less than one percent of cases, Alzheimer's disease is caused by certain genetic changes that practically guarantee a person will suffer from this disease. These rare events usually lead to the onset of the disease in middle age. Damage often begins in the area of the brain that controls memory. The loss of neurons spreads to other areas of the brain in a predictable pattern, and the brain shrinks significantly. To treat Alzheimer's in the elderly and the cause of their disease, researchers have focused on the role of two proteins: Beta-amyloid plaques are fragments of a larger protein. When these pieces come together, they appear to have a toxic effect on neurons, disrupting cell-to-cell communication. Tau proteins play an important role in the support and internal transport of neurons to transport nutrients and other essential substances (Figure 6).

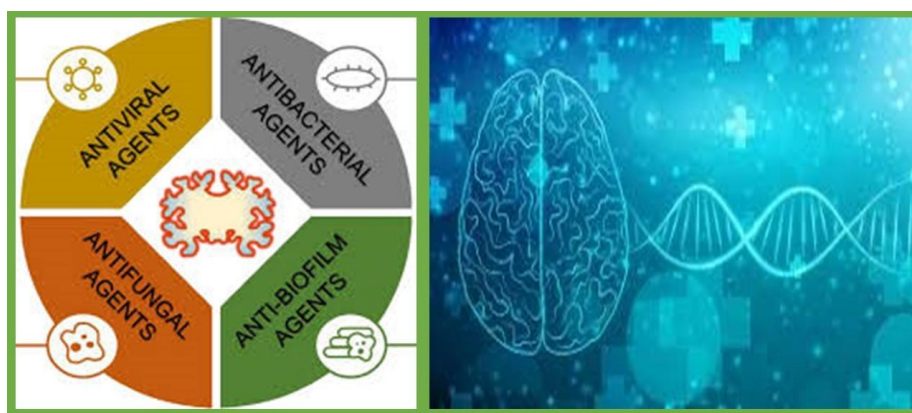


Figure 6. Alzheimer's Patients Disease

In Alzheimer's disease, tau proteins change shape and organize themselves into structures called neurofibrillary tangles. Memory loss is the main symptom of one of the diseases of the elderly, which is called Alzheimer's. As the disease progresses, memory impairments and other symptoms develop. At first, a person with Alzheimer's becomes aware of the difficulty in remembering things and organizing thoughts. Brain changes associated with Alzheimer's disease lead to increasing problems with: Memory Everyone experiences memory lapses from time to time, but memory loss in Alzheimer's disease continues and worsens, affecting a person's ability to function at work or at home. Affect. People with Alzheimer's may: Repeat sentences and questions over and over. Forgetting conversations, appointments, or events and not remembering them later typically misattributes assets to their owner. They get lost in familiar places. Finally, they forget the names of family members and everyday objects. They have difficulty finding the right words to identify objects, express thoughts, or participate in conversations.

It is difficult to juggle tasks at the same time and it becomes difficult to manage finances, balance the checkbook and pay bills on time. Finally, a person with Alzheimer's may not be able to recognize numbers and deal with them. Alzheimer's judgment and decision-making reduces the ability to make decisions and make logical judgments in everyday situations. For example, a person may make poor or unclear choices in social interactions or wear inappropriate clothing for the weather. Planning for Alzheimer's treatment in the elderly and doing familiar things routine activities that require sequential steps, such as planning and cooking a meal or playing a favorite game, become a struggle as the disease progresses. Finally, people with advanced Alzheimer's often forget how to perform basic tasks such as dressing and bathing. Alzheimer's is not a part of normal aging, but with increasing age, the treatment of Alzheimer's in the elderly becomes more difficult and the possibility of contracting the disease increases.

Family history and genetics If a first-degree relative - a parent or sibling - has the disease, the risk of developing Alzheimer's

will be somewhat higher. Most of the genetic mechanisms underlying Alzheimer's disease in the elderly among families are largely unknown. One of the better known genetic factors is a form of the Apo-lipoprotein E (APOE) gene. A variant of the APOE e4 gene increases the risk of Alzheimer's disease.

This is probably related to having three copies of chromosome 21 and subsequently three copies of the protein gene that leads to beta-amyloid formation. The signs and symptoms of Alzheimer's in people with down syndrome will appear 10 to 20 years earlier than the general population, and treating Alzheimer's in the elderly with down syndrome is almost impossible.

Mild cognitive impairment mild cognitive impairment (MCI) is a decline in memory or other thinking skills that is greater than normal for a person's age; But this reduction does not prevent a person's performance in social or work environments. People with MCI are at significant risk of developing dementia. When MCI is the primary memory deficit, it is more likely to progress to Alzheimer's disease dementia. People who have experienced severe head trauma are more at risk of developing Alzheimer's disease. Several large studies have shown an increased risk of dementia and Alzheimer's disease in people age 50 or older who have had a traumatic brain injury (TBI). This risk increases in people with more severe and multiple TBI. Human studies also show that exposure to air pollution—especially smoke from car exhaust and wood burning—delays Alzheimer's disease in the elderly.

Several large studies and reviews have shown that alcohol use disorders are associated with an increased risk of dementia, particularly early-onset dementia. According to research, poor sleep patterns, such as difficulty falling asleep or staying asleep, are associated with an increased risk of Alzheimer's disease. Stages of Alzheimer's disease mild Alzheimer's people with mild Alzheimer's have memory problems and cognitive problems that include: Taking longer than usual to do daily tasks, difficulty handling money or paying bills, getting lost, experiencing personality and behavioral changes, like getting upset or angry easily. Ways to treat moderate Alzheimer's disease at this stage, the part of the brain that controls language, reasoning, conscious thinking and sensory processing such as the ability to correctly recognize sounds and smells will be affected.

Moderate Alzheimer's disease results in the following symptoms: Memory loss and increased confusion difficulty recognizing friends or family inability to learn new things difficulty performing multi-step tasks, such as getting dressed difficulty coping with new situations impulsive behavior hallucinations, delusions, or paranoia, Finally, the plaques and nodules spread throughout the brain and the brain tissue shrinks significantly. People with severe Alzheimer's have difficulty communicating and are completely dependent on others to take care of themselves. Near the end of life, one is bedridden full time as the body fails.

Diagnosis of Alzheimer's disease. Wearing clothes in Alzheimer's patients is not possible. There is no single test for Alzheimer's disease. If the doctor suspects the existence of this condition, he will ask the person and sometimes his family or caregivers about his symptoms, experiences and medical history so that he can take the best way to treat Alzheimer's in the elderly [60].

A doctor may also perform the following tests to treat Alzheimer's in the elderly: Cognitive and memory tests, to assess a person's ability to think and remember neurological function tests, to test their balance, senses, and reflexes blood or urine tests CT scan or an MRI scan of the brain genetic testing in some cases, genetic testing is appropriate because the symptoms of dementia will be linked to an inherited disease such as Huntington's disease. Some forms of the APOE e4 gene are associated with a higher chance of developing Alzheimer's disease. Early testing for related genes can reveal the likelihood of developing the disease. However, the test is controversial and the results are not completely reliable. Treatment of Alzheimer's disease in the elderly treatment of Alzheimer's disease in the elderly. The challenge facing society. The treatment of Alzheimer's disease is complex, so it is unlikely that any drug or other intervention can cure it in all people with this disease.

In recent years, scientists have made good progress in better understanding Alzheimer's and rehabilitation of the elderly. The development and testing of new treatments, including several drugs that are in the final stages of clinical trials, represents a significant progress in the treatment of this disease. Several prescription drugs have already been approved by the US food and drug administration (FDA) to help manage symptoms in people with Alzheimer's disease.

On June 7, 2021, the FDA granted fast-track approval for the newest drug aducanumab, which helps reduce amyloid deposits in the brain. This drug plays a role in slowing the progression of Alzheimer's, although its clinical results have not yet been proven. Most drugs work best in the early or middle stages of Alzheimer's. It is also important to understand that none of the drugs available at this time will cure Alzheimer's.

These medications may help reduce or control some cognitive and behavioral symptoms. Scientists do not yet fully understand how cholinesterase inhibitors work to treat Alzheimer's disease in the elderly; Research shows that they prevent the breakdown

of acetylcholine, a chemical important for memory and thinking. As Alzheimer's progresses, the brain produces less acetylcholine, so these drugs eventually lose their effectiveness.

Drugs that target the underlying causes of a disease are called disease-modifying drugs or therapies. Aducanumab is the only drug currently approved for the treatment of Alzheimer's disease in the elderly. This drug is a humanized antibody, or immunotherapy, that targets beta-amyloid protein and helps reduce amyloid plaques, the brain lesions associated with Alzheimer's. Before prescribing aducanumab to treat Alzheimer's in the elderly, doctors may need a PET scan or cerebrospinal fluid analysis to assess the presence of amyloid deposits in the brain. This helps doctors diagnose Alzheimer's before prescribing drugs. When a person is taking aducanumab, their doctor or specialist will need routine MRIs to monitor for side effects such as brain swelling or bleeding in the brain.

Several other disease-modifying drugs are being tested as potential treatments in people with mild cognitive impairment or early Alzheimer's. The main effect of this drug is to reduce symptoms. This medication can enable some people to carry out certain daily activities a little longer than they could without the medication. For example, memantine may help someone in the later stages of the disease maintain their ability to use the bathroom independently for several more months. This is beneficial for both the person with Alzheimer's disease and the caregivers. Memantine is believed to work by regulating glutamate, an important brain chemical. When glutamate is produced in excessive amounts, it will lead to the death of brain cells. The three most common drugs approved by the Food and Drug Administration (FDA) for the treatment of Alzheimer's disease in the elderly are donepezil (Aricept), for the treatment of all stages, galantamine (Razadyne), for the treatment of mild to moderate stages, rivastigmine (Exelon), for the treatment of mild stages. Another drug, memantine (Namanda), is approved for the treatment of moderate to severe Alzheimer's disease. A combination of memantine and donepezil (Namzarik) is also available. Managing the behavioral symptoms of Alzheimer's disease. Common behavioral symptoms of Alzheimer's include insomnia, wandering, restlessness, anxiety, aggression, and depression.

Discuss

Specifically, Alzheimer's is a type of brain dysfunction that occurs little by little and destroys the patient's mental abilities. At first, it creates a short-term memory disorder and gradually attacks all the memories of a person. For example, the patient even forgot the answer to the question he asked you a while ago and asks the same question again. He loses his things. He forgets the way back home and gradually he has difficulty in recognizing his friends and acquaintances and in remembering their names. In more severe cases, he can't even wear clothes, take a bath, eat, go to the toilet. Further, memory disorder causes problems in the patient's personal and social behavior and as a result causes depression, anger and aggression in the patient. People with Alzheimer's suffer from depression themselves, and those around them suffer from mental disorders and sometimes depression and aggression due to severe involvement with the patient's problems.

Continuous movement in increasing blood flow: Alzheimer's patients usually have a negative effect on balance and increase the possibility of falling on the ground. Regular physical therapy helps maintain muscle and bone strength and improve coordination. People with Alzheimer's may have difficulty walking. Physiotherapy helps prevent falls by improving muscle memory. In this case, even when walking on unstable surfaces, the muscles will maintain their proper response. Physiotherapy also improves the quality of sleep (Figure 7).



Figure 7. Continuous movement in increasing blood flow

Research related to the treatment of Alzheimer's shows that physical therapy and walking for 30 minutes a day after six months increases the duration of sleep for 36 minutes and prevents waking up during sleep.

Time of doing daily activities and its impact

Increasing the patient's ability to take care of himself is very important in order to maintain independence. Daily activities such as bathing, dressing, feeding and using the toilet become difficult for a person due to Alzheimer's disease. The physiotherapist helps the patient by using special exercises to perform these activities. The physiotherapist also helps the family members to create a safe space for the patient. The goal of treatment is to maintain the patient's independence and functional ability as much as possible. Memory loss is a major problem for the patient and family members. In physiotherapy, regular special exercises are used to improve blood flow to the brain. Research related to Alzheimer's treatment shows that 40 minutes of physical activity for a period of four times a week in one year leads to the growth of the hippocampus in the brain.

The hippocampus is a part of the brain that is related to memory. Also, physical activity increases the gray and white matter of the brain. Damage to the gray and white matter is one of the common symptoms of Alzheimer's disease.

The physiotherapist helps the patient to adapt his favorite activity to his current condition. These activities have a positive effect on the patient's communication with others. An experienced and skilled physiotherapist uses simple and unique methods to make life easier for the patient and family members. The physiotherapist has helped the patient to delay the progression of Alzheimer's symptoms so that the patient can enjoy his life as much as possible.

Prevention of Alzheimer's disease

Currently, there is no definitive way to prevent Alzheimer's disease. But the possibility of developing this disease can be reduced by taking measures. Adults who are physically active are less likely to develop Alzheimer's disease or other types of dementia. Moderate intensity activity is useful and appropriate for most people, but it is better to consult with a doctor before starting any exercise program.

The possibility of Alzheimer's disease is lower in mentally active elderly people. Activities such as reading, mental games, solving tables and even watching TV or listening to the radio may also help prevent the symptoms of this disease. Going out of the home and socializing can also be effective in preventing Alzheimer's disease. Although the effectiveness of these methods

in preventing Alzheimer's has not been officially proven, mental activities are generally effective in maintaining brain function. In relation to the question of what foods should be consumed to prevent or treat Alzheimer's, it should be said that the purpose of some researches is to find a connection between the Mediterranean diet and reducing the risk of Alzheimer's. More research is needed in this field.

Acupuncture: According to studies, the use of sterile needles improves the condition of Alzheimer's patients because it stimulates body tissue and improves energy flow. On the other hand, it has been found that acupuncture may improve mood and cognitive function in people with Alzheimer's. This procedure should be performed by a trained and licensed professional.

Massage therapy: Usually, people with Alzheimer's disease are frustrated and anxious because they cannot communicate well through language. So using touch or massage as non-verbal communication may help. In one study, people with Alzheimer's disease who were massaged and talked to in a soothing manner had lower heart rates and did not engage in as much inappropriate behavior.

Aromatherapy: In this method, essential oils such as rosemary, lemon, orange and lavender are used to increase the well-being of Alzheimer's patients. The results of a study on elderly people with Alzheimer's also showed that their thinking power improved with the help of aromatherapy.

Light therapy: Alzheimer's patients are usually faced with disturbances in the sleep and wake cycle. Valid studies have shown that light therapy helps to restore balance in the sleep-wake cycle.

Music therapy: Listening to soothing music has been found to slow the rate of dementia. As a result, it is also effective in improving the quality of life of Alzheimer's patients. Clinical reports show that music therapy can reduce wandering and restlessness and increase chemicals in the brain that improve sleep and reduce anxiety. It has also been found that listening to music improves mood in patients.

Apart from the mentioned cases, these drugs also have the following effects:

- They prevent the breakdown of acetylcholine, which is a very important and vital messenger in the process of learning and memory. This drug supports communication between neurons by keeping the level of acetylcholine high.
- It stops or slows down the worsening process of disease symptoms. The performance of this drug at this stage varies from person to person.

Side effects of cholinesterase drugs include nausea, vomiting, loss of appetite, and frequent bowel movements. Therefore, doctors are advised to monitor the patient carefully when prescribing this group of drugs and to quickly observe and investigate any changes in the disease process.

Three types of cholinesterase inhibitor drugs are currently prescribed

Donepezil under the brand name Aricept: This drug is prescribed in the treatment of all three stages of Alzheimer's disease.

Galantamine under the brand name Razadyne: This drug is prescribed for the treatment of mild to moderate stages of the disease.

Rivastigmine (Rivastigmine) under the brand name Exelon: This drug is prescribed for the treatment of non-severe to intermediate stages of Alzheimer's disease to intermediate stages of dementia caused by Parkinson's disease.

Drugs used in the intermediate to severe stages of Alzheimer's

Memantine and the combination of memantine and donepezil are approved by the US Food and Drug Administration for the treatment of moderate to severe Alzheimer's disease. Apart from the mentioned cases, memantine has the following effects:

- Regulates the activity of glutamate, these chemical plays a very important role in the process of analyzing, storing and retrieving information.
- Improves mental functions and helps some people with Alzheimer's disease to perform their daily activities more accurately and better.
- This medicine will have side effects including headache, dizziness, confusion and constipation.

Herbal medicine for Alzheimer's

Ginkgo (Ginkgo). Today, there is evidence that this herbal medicine can be used to treat mild Alzheimer's disease and vascular dementia. However, a large randomized, double-blind, placebo-controlled study found that ginkgo does not prevent Alzheimer's disease or dementia. If you are taking blood thinners such as warfarin, clopidogrel, or aspirin, do not use this herb without your doctor's supervision.

Huperzine A (Huperzine A): According to several studies in China, Huperzine A plant can improve memory status in vascular dementia and Alzheimer's. It is interesting to know that the use of this herb may slow down your heart rate and interfere with many medications. Do not take Huperzine A if you have liver disease because it may cause a blockage in the digestive tract. There is also concern that Huperzine A may worsen emphysema. If you are taking chemical medicine to treat Alzheimer's disease, consult your doctor before taking this herb.

Ginseng (Ginseng): Ginseng improves blood flow to the brain. If you have high blood pressure, diabetes, or a history of hormonal disorders, use with caution and consult your doctor before combining ginseng with ginkgo biloba.

Lemon balm: A study has shown that lemon balm helps improve mental performance in people with mild to moderate Alzheimer's disease. Lemon balm may act as a mild sedative.

Bacopa (Bacopa): Bacopa leaves are used in Ayurveda or Indian medicine to improve brain function and learning. According to a study, it seems that the consumption of the extract of this medicinal plant at the rate of 300 mg per day for 12 weeks improves brain function in healthy people. People with stomach ulcers, intestinal problems, or emphysema should not take bacopa. It may slow your heart rate.

Vinpocetine: This medicinal plant increases the blood flow in the brain and helps the brain to use more oxygen. Vinpocetine may interact with blood thinners such as warfarin, clopidogrel, and aspirin [61-63].

Medical evaluation for factors involved in Alzheimer's disease

If behavioral changes are observed, the Alzheimer's patient should be evaluated to receive drug treatment. This becomes even more important when rapid changes occur. Many of the behavioral changes of an Alzheimer's patient are due to the effect this disease has on the brain. However, by performing detailed tests, other treatable conditions involved in these changes can be observed and resolved.

- Side effects of drugs: Many people with Alzheimer's receive drugs for other problems. These drugs may interact with each other and eventually cause changes in the behavior of a patient with Alzheimer's.
- Problems caused by infection or other conditions: As the disease progresses, people with Alzheimer's disease can hardly communicate with others. Therefore, they may not be able to report to others the problems that occur to them due to other diseases. Pain caused by urinary tract infection or pain caused by ear sinus infection will eventually cause distress and restlessness in these people. People with Alzheimer's probably suffer from digestive problems such as constipation and bloating, as well as feeling cold or too hot, and this suffering and difficulty will be reflected in the behavior of the patient with Alzheimer's.
- Difficulties in hearing and seeing: These problems will eventually cause confusion and the person will feel isolated from the people around him to a great extent.

The steps of a successful non-pharmacological method are:

- Recognizing that the person really has the symptoms of the disease and is not playing the role of an Alzheimer's person with the behavioral pattern of the disease.
- Diagnosing the cause and to what extent the symptoms of the disease are related to the experience of an Alzheimer's patient.
- Changing the environment around the patient in order to solve the challenges and obstacles that have become an obstacle to the comfort and security of the patient and have involved the patient's mind to a large extent.

Non-pharmacological methods for managing behavioral changes in Alzheimer's patients

Non-pharmacological methods to manage the changes in the behavior of the Alzheimer's patient ultimately make the patient feel better physically and emotionally (Figure 8 & 9). Achieving many of these strategies that are recommended to better understand the needs of a person with Alzheimer's disease will become difficult as the person's disease progresses. Therefore, non-pharmacological methods should always be used in the early stages of the disease.

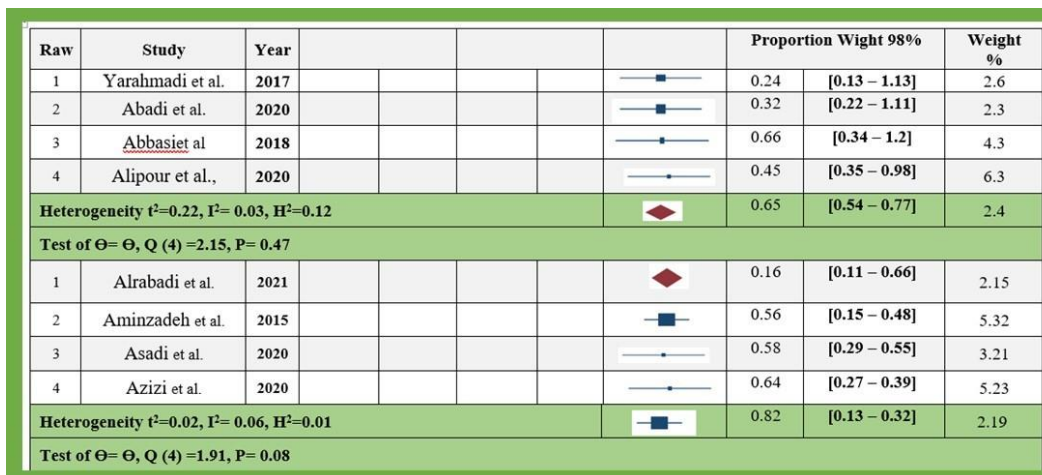


Figure 8. Forest plot showed Analysis of Alveolar Crestal Bone

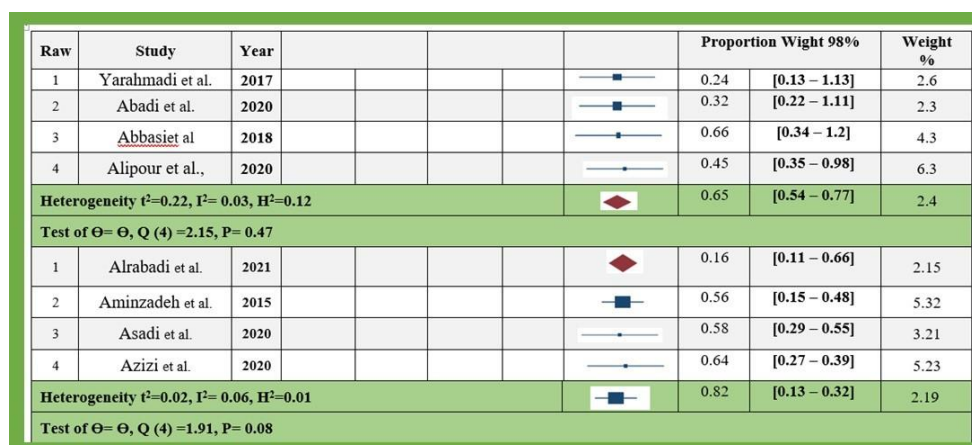


Figure 9. Forest plot showed Cantilever Base Implants Using Scientific Sources

Conclusion

Alzheimer's disease is a progressive disease that destroys memory and other important mental functions. Alzheimer's is the most common cause of dementia – a group of brain disorders that cause the loss of intellectual and social skills. In Alzheimer's, brain cells degenerate and die, causing a steady decline in memory and mental function. Existing Alzheimer's disease medications and interventional strategies may temporarily improve Alzheimer's disease symptoms. Scientists believe that for most people, Alzheimer's disease is caused by a combination of genetics, lifestyle and environmental factors that affect the brain over time. In less than 5 percent of cases, Alzheimer's is caused by certain genetic changes that virtually guarantee a person will develop the disease. Although the causes of Alzheimer's are still not fully understood, the effects on the brain and the symptoms of Alzheimer's are well understood. Alzheimer's damages brain cells and kills brain cells. A brain affected by disease has fewer cells and fewer connections between cells than the rest of a healthy brain. As more and more brain cells die, the disease leads to significant brain shrinkage.

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