

# Alzheimers disease research paper

[Health & Medicine](#), [Disease](#)



## **Alzheimer's disease**

How would you react when you notice that your grandfather starts to do the weirdest things ever such as forgetting the name of common objects, putting his fragrances inside of the kitchen's cabinets and even blaming you for taking his sacks. Wouldn't you feel sad if he doesn't recognize who you are? Would you think that is normal for a person of his age? If your answer is yes, that means that you like many people misinterpret memory loss in seniors with the Alzheimer's disease.

Alzheimer's is a type of dementia that causes problems with memory, thinking and behavior (National Institute on Aging, n. d.). Signs typically develop slowly and get worse over time, becoming severe enough to interfere with daily tasks (National Institute on Aging, n. d.). Of all the forms of dementia, Alzheimer's stands out as the most common form. The disease's manifestation comes in the form of memory loss and affects one's intellectual functioning to the extent of interfering with one's normal life. Alzheimer's is not a normal part of aging. With regard to the fact the most people affected by this form of dementia are 64 year old and above, age emerges as the most dominant risk factor in Alzheimer's. However, is not just a disease for old age. We find a 5 percent of people with the disease having an early onset, known as a younger-onset which appears during their 40's or 50's.

According to the National Institutes on National Institute on Aging (n. d.) 5. 1 million Americans have AD and these numbers will continue to increase not only because of the baby boomers, but also because scientists haven't found the cure yet. There are only two types of medications approved by the FDA

for the treatment of Alzheimer's; cholinesterase inhibitors and memantine (Alzheimer's Association, n. d.; Turkington, & Mitchell, 2010). Besides the cognitive issues, this illness also carries other symptoms like anxiety, angry, depression, sleeplessness and agitation. Herbert (2010) describes Alzheimer's disease as a neurological disorder which interferes with the functioning of the brain's cortex. The cortex region is a very important region of the brain because in it thoughts and voluntary movements are generated. Vision, hearing and speech are also located here. Plaques and tangles obstruct the normal communication among neurons and neuron forest that as a result the body can't receive messages from the neurotransmitters. Consequently, the brain will slowly shrink over time. An autopsy can be used to determine whether a person died of Alzheimer's or not. The autopsy will reveal if the brain has abnormalities signs of the disease.

Ideally, a patient with AD cannot be able to do the simplest tasks and have a normal social life as the disease progress. For this reason, many researches are being conducted in a bid to come up with prudent ways of helping people with moderate AD to perform basic daily activities and prolog the disease. A group of five researches decided to come up with a " Technology-aid pictorial cues" that would be able to support these individuals. This technology-aid pictorial cue was based on verbal instructions that the patient must followed while he/she was doing the activity (Lancioni, et. al., 2012). It was divided in two sections. Section 1 and Section 2 used the strategy version with pictorial cues but only section 1 added the verbal instructions. However, both sections were compared with " an existing technology-based strategy with verbal instructions" (Lancioni, et. al., 2012). Three people with

moderate Alzheimer were part of the study, Berky 73, Agnes 77 and Dawn 77. Agnes was the only one who was not receiving any medication for the AD and didn't have depression (Lancioni, et. al., 2012).

The three of them went to a day center and were placed in a quiet room. They needed to perform four different activities that were supervised and spread between sections 1 and sections 2. In sections 1, Berky, Agnes and Dawn had to prepare vegetables and cleaning and sorting kitchen items (Lancioni, et. al., 2012). Sections 2, they had to prepare fruit juice and arranging the items for serving it. In order to complete the tasks, they used two different desks. One desk had all the items required to do the activity and the other desk was used for organizing the items and to finish the activity. The performance was recorded by research assistants and was marked correct if the participant followed the steps. The results were given in percentages by “ dividing the number of activity steps with agreement by the total number of steps, and multiplying by 100”. The results were between 85 and 100. The researchers used two different types of technology to record each activity. For Instance, for verbal instructions were saved on a pen and every time that the participant followed the instructions, the optic sensor was activated and “ triggered the MP3 player that represented the next instruction”. On the other hand, the pictorial cues showed each image (instructions) on a screen and every time that the participant took the right item the optic sensors were activated and showed the next instruction (Lancioni, et. al., 2012). The results of this study had a positive outcome because with the support of technology-aided to execute the pictorial cues and verbal instructions had a great impact to these participants to do their

daily simple activities.

Through experiments including two new studies in mice, researchers have concluded that Alzheimer's spreads from brain cell to brain cell inside the brain through a malfunctioning protein called tau. Scientists have also established that other brain diseases like Parkinson's may also spread in the same way. The most likely cause of this disease is the protein called beta amyloid that accumulates in the brain of Alzheimer's patients, forming hard barnaclelike plaque. Unlike tau, it clumps outside cells and does not spread throughout cells. Early research shows that tau filled cells appear in places in the brain where memories are stored, causing forgetfulness.

The beta amyloid protein is said to "create a bad neighborhood," while the tau is said to be the "executioner." Tau Proteins normally stabilize the scaffoldlike microtubules that carry messages within a healthy neuron. But in some circumstances, tau detaches and forms tangled clumps, disrupting the microtubules and finally killing the cell. Older studies are controversial, different scientists having different opinions on the spread of this disease. Studies in humans could not reveal whether that assumption was accurate. Dr. Small said that they include autopsy and brain imaging revisions and was indirect and unconvincing. Nevertheless, due to newer advances, experts have revealed that Alzheimer's certainly spreads cell to cell (Kolata, 2012). This outcome came up after Dr. Hardy's colleague treated two Parkinson's patients who had fetal brain cells implanted to substitute dead and dying neurons (Kolata, 2012). Years later when they died, autopsies indicated the patients still had the fetal cells, but they had spheres of a Parkinson's infection protein, synuclein, inside.

Scientists propose an antibody that blocks tau to treat this disease. In mice, studies show that cells start dying at the entorhinal cortex, where traces of tau can be found. Since mice cannot make human tau proteins, the protein was spread from cell to cell, which scientists consider is the case in humans as well. However, scientists are still conducting extensive research on this topic; we still cannot unravel all the ambiguities of Alzheimer's.

## **Neurological Causes of Alzheimer's Disease**

According to Amaiz & Almkvist (2003), genetic inheritance, age and environmental factors are some of the major causes of Alzheimer's disease. These factors contribute largely to the deterioration of cognitive functions by affecting nerves concerned with the same aspect. The factors usually act in combination to bring the effects that lead to the development of Alzheimer's disease. This is probably why the disease is common in certain age groups, families and environments (Wenk, 2003).

Alzheimer's disease begins at the age of sixty five in most countries. However, in places like the United States of America, onset rates have been placed as early as fifty five years of age depending on the severity of risk factors. The disease begins and progresses slowly. At around the age of sixty five, brain functions are impaired leading to the slow loss of cognitive functions and memory. At this stage, motor sensory impairment is almost unrecognizable (Amaiz & Almkvist, 2003). Only neurological testing can be used to identify Alzheimer's disease at this stage. At this early stage, a small portion of neurological functions can also be affected. This includes; perception also known as agnosia and memory. Episodic, implicit and semantic memories are also affected as the disease progresses. This is

characterised by distortion or loss of memory. For instance; fact learnt in the previous life (semantic memory) is distorted or lost such that there is no chronological recall of the same.

As the disease progresses, the patient is unable to perform normal daily functions like eating without assistance (Wenk, 2003). This is because of the lack of motor sensory coordination. This can also be characterised by the inability to control toilet functions. The long term memory is utterly debased causing complete inability of recall (Amaiz & Almkvist, 2003). The language centre of the brain is also impaired causing inability to communicate. This is caused by the impairment of nerves related to the language aspect of a person. The nerves of the eyes are also impaired causing illusionary misidentification. At this stage, professional care is advisable.

At the most advanced stage of Alzheimer's, all neurological functions are almost entirely obsolete. The motor sensory and cognitive neurons are impeded by the lack of the synthesis of the neurotransmitter acetylcholine. This leads to generalised neuro-inflammation which makes neurons obsolete. In some cases, it is postulated that tangling of neurons caused by tau proteins affects the functions of the neurons. Consequently, the synapses in the cerebral cortex of the brain are totally non- functional (Amaiz & Almkvist, 2003). This is the last stage of Alzheimer's disease. The patient requires monitoring for twenty four hours. Initially, the effects were absolutely irreversible. However, with technology, various modes of intervention are currently available. These have been able to reverse the disease at earlier stages.

## **Modes of Intervention in Alzheimer's disease**

Pharmacological, psychosocial, nutritive, mind- body medicine, hormone replacement and physical therapy are the various therapeutic interventions available for people living or diagnosed with Alzheimer (Akhondzadeh & Abbasi, 2006; Greg, 2004; Walder, 2007). Pharmacological drugs such as Exelon and Aricept have been used to slow down the progression of Alzheimer's. These drugs increase acetylcholine transportation to the brain enhancing neurological functions. Other drugs act to enhance memory retrieval cues by regulating glutamate metabolism. Glutamate is a chemical messenger that is useful in retrieval and storage of memory. Memantine is the drug used for this purpose (Greg, 2004). Other drugs such as those that control serotonin uptake are also useful in this case.

Various herbs are used to treat this condition (Akhondzadeh & Abbasi, 2006). Ginkgo, Huperzine, Ginseng, Bacopa, lemon balm and Vinpocetine are some of these herbs. Most of the herbs contraindicate the symptoms of Alzheimer's disease. For instance; Vinpocetine increases blood flow to the brain increasing the oxygen supply which prevents neurone inflammation and tangling. Simple herbs like curcumin found in turmeric are powerful antioxidants. This is quite useful when it comes to therapeutic measures against Alzheimer disease. Some nutritional aspects have also been useful in slowing the progression of Alzheimer. A good example is the use of fruits which enhance the strength of the neurons preventing inflammation.

Acupuncture is a form of medicine that is used to stimulate the nerves (Greg, 2004). This is achieved through trans-cutaneous nerve stimulation evident in acupuncture. The increase in nervous activity controls coordination which



prevents the effects of lack of glutamine (Akhondzadeh & Abbasi, 2006).

Another form of intervention with the same effect is the use of massage. This is used as a way of calming stress and also as a stimulant of nerves. Soft touch like that evident in massage has been used successfully to improve the action of nerves. Consequently, the progression of symptoms is hindered.

A recent study also showed that the use of music as a mind- body therapy slows down deterioration of neural functions (Greg, 2004). Music has the ability to help people with bad moods, relieve stress, enhance a person's cognitive functioning and also help someone with motor movement problems- this is only possible when music is used appropriately with help of a specialist in music therapy. Apparently, the calming of nerves is useful especially in cases where tangling is a causative agent. This is an indirect therapeutic mechanism. This experiment was successful in enhancing the activity of cortical neurones.

As people age, their hormones tend to lose function, and the body gets rid of such hormones. For instance; oestrogen production is diminished in females at menopause. This poses a risk factor as oestrogen protects nerve endings (Greg, 2004). This is the same case when it comes to testosterone hormone found in males. Hormone replacement therapy is employed as a way of protecting these nerve endings. As a result, the nerves regain their normal functions.

## **Lifestyle of People Living With Alzheimer's Disease**

During the first stages of Alzheimer's disease, the symptoms may go unnoticed. The life of an individual may seem normal (Kidd, 2008). The

symptoms may be as mild as simple memory losses. Unless one visits a doctor, the symptoms may easily go unnoticed. The life of an individual at this stage may seem normal and uncomplicated. In fact, it is highly unlikely that a person would need a caretaker. Therefore, life continues normally, and social life seems almost normal. Most patients who have regular doctor checkups will know of their condition at this stage. The disease cannot be reversed, but the progression of the symptoms can be slowed using some of the mechanisms described above. The patient is advised to find a caretaker or to move in with a family member (Joaquim, Carlos & Lia, 2012).

However, as the disease progresses to the middle stage, the symptoms become severe. Patients who had not recognised the symptoms at the first stage will definitely require a hospital check up at this stage. In this case, an individual may have major memory losses which may incapacitate them. At this stage, the patient will definitely require a caretaker (Joaquim, Carlos & Lia, 2012). At this stage, the patient may be unable to recall normal functions like eating or general hygiene. Such patients require a lot of care and patience. The presence of a family member or caregiver is advised at this stage. Furthermore, general visits to the hospital for check up are mandatory. The patient survives on therapeutic drugs and nutritional supplements. The patient may be able to remember a few things occasionally.

The last stage of Alzheimer is usually quite critical (Joaquim, Carlos & Lia, 2012). The patient is unable to perform normal functions. Language, thinking and motor sensory coordination is usually downright obsolete. For instance; the patient may have urine incontinence, inability to communicate

coherently and they cannot remember anything thus the death of their social life. The symptoms are usually expressed differently in various individuals. While some individuals may be completely incapacitated, others have sporadic symptoms with good and bad days. Some patients are usually agitated, and various measures of intervention discussed above are used. A caregiver is quite necessary to a patient suffering from Alzheimer's at all stages. With the identification of risk factors, regular visits to the doctor are quite useful. However, during the last stages, the patient may require complete hospitalisation, which will cater for their needs. At the second stage, the patient may be in a position to perform some social functions. If this is the case, then they should be permitted to do so (Joaquim, Carlos & Lia, 2012). Generally, the life of an Alzheimer's patient deteriorates as cognitive function is affected in the same manner.

### **Activities for People with Alzheimer's disease**

According to Grandmaison (2009), the most significant activities that an Alzheimer patient can undertake include one that enhances neurone activity. A similar sentiment is echoed by Braak and Tedici (2012). The same authors give the assertion that the only way to deal with a neurone disorder is to ensure that the neurones are protected. Ideally, these assertions underscore the fact that the disease commonly leads to neurone loss which might lead to atrophy of the grossly affected regions which in most cases is the cerebral cortex. Other commonly affected regions include the temporal lobe some parts of the frontal cortex. As such, mind and nerve stimulating activities are quite necessary for these patients.

Visual imagery is one of these activities. Here, the patient is exposed to

visual images in combination with audio messages. It should be noted that memory is as a result of both verbal and visual semantic modes. This can be achieved by using systems developed by researchers in this field. Moreover, an errorless learning approach can be used (Grandmaison, 2009). This is a form of memory training where a patient is disallowed to commit any errors. This facilitates encoding and decoding of messages which is effective in enhancing nerve function and memory.

The other technique is the use of vanishing cues, which are attempts to recall previous information (Braak & Tedici, 2012). This can be used in conjunction with the errorless learning technique. The patient together with the care giver can also participate in activities that aid memory recall such as simple games. Most of these activities are meant to stimulate nerves and to help in memory encoding and decoding. Apart from the technical activities, simple activities like physical therapy, light exercises and massage are quite useful in these patients. Massage and physical therapy are forms of neurone stimulation. Light exercises are for general health care and motor coordination.

## **References**

Akhondzadeh S, & Abbasi S, H. (2006). Herbal medicine in the treatment of Alzheimer's disease. *Am Journal of Alzheimers Disease and Other Dementia*. 21(2), 113-118.

Alzheimer's Association. (n. d.). Latest Medication for Memory Loss |

Alzheimer's Association. Alzheimer's Disease and Dementia | Alzheimer's

Association. Retrieved May 11, 2013, from [http://www.alz.org/alzheimers\\_disease\\_standard\\_prescriptions.asp](http://www.alz.org/alzheimers_disease_standard_prescriptions.asp)

[https://assignbuster.com/alzheimers\\_disease\\_standard\\_prescriptions.asp](https://assignbuster.com/alzheimers-disease-research-paper/)

<https://assignbuster.com/alzheimers-disease-research-paper/>

Arnáiz E., & Almkvist, O. (2003). Neuropsychological Features of Mild Cognitive Impairment and Preclinical Alzheimer's Disease. *Acta Neurological journal*. 179, 34-41.

Braak H, D., & Tredici, K. (2012). Where, when, and in what form does sporadic Alzheimer's disease begin? *Current opinion in neurology*. 25(6), 708-814.

Grandmaison, E. (2009). A Critical Review of Memory Stimulation Programs in Alzheimer's Disease. *The Journal of Neuropsychiatry and Clinical Neurosciences*. 15, 130-144.

Greig N, H. (2004). New Therapeutic Strategies and Drug Candidates for Neurodegenerative Diseases and TNF-alpha Inhibitors, and GLP-1 Receptor Agonists. *Annual Neurological young Academic Science*. 1035, 290-315.

Herbert, Miranda. (2010). Human Diseases and Conditions. In C. Scribner (Ed.), *Alzheimer's Disease* (pp70-76). Retrieved from <http://go.galegroup.com/ps/retrieve.do?sgHitcountType=None>

Joaquim, P., Carlos, S., & Lia, F. (2012). The Needs of Older People with Mental Health Problems: A Particular Focus on Dementia Patients and Their Carers. *International journal of Alzheimer's disease*. 13(3), 186-430.

Kidd, P, M. (2008). Alzheimer's disease, amnestic mild cognitive impairment, and age-associated memory impairment: current understanding and progress toward integrative prevention. *Alternative Medical Review*. 13(2), 85-115.

Kolata, G. (2012, February 3). Path Is Found for the Spread of Alzheimer's. *The New York Times*. Retrieved from <http://www.nytimes.com>

Lancioni, G. E., Perilli, V., Singh, N. N., O'Reilly, M. F., Sigafos, J., Cassano,

G., Pinto, K., Minervini, M. G., & Oliva, D.. (2012). Technology-aided pictorial cues to support the performance of daily activities by persons with moderate Alzheimer's disease. *Res Dev Disabil*, 33(1), 265- 273.

National Institute on Aging. (n. d.). Alzheimer's Topics. National Institute on Aging . Retrieved May 11, 2013, from <http://www.nia.nih.gov/alzheimers>

Turkington, C., & Mitchell, D. R. (2010). *The encyclopedia of Alzheimer's disease*. New York: Facts On File.

Wenk, G. (2003). Neuropathologic Changes in Alzheimer's Disease. *Journal of Clinical Psychiatry*. 64 (9), 7-10.