

HEALTH CARE AND SOCIETY

ALZHEIMER DISEASE

Alzheimer's disease changes lives. Even though the disease is gradual, no one is ever ready for the impact the disease has on family relationships and responsibilities. Although I was young, I remember the day clearly when my family and I were told that my great aunt had Alzheimer's. My great aunt was always a big part of my life when I was growing up and still is; I remember her as this lovely woman who had quirky traits to her personality and many tails to tell. We were always close, as at the time I was her only niece and the bond we had still remains today, even though she struggles to remember who I am.

Over the years, the awareness and knowledge of the research and the treatment of Alzheimer's has increased. As more people are being diagnosed at an earlier stage of the disease; I am reminded of my great aunt's situation and this is why I have chosen this topic of interest to write about, as it not only interests me but it's also close to my heart as I know what it was like being a family member of someone who suffered from the disease and the challenges we faced together.

WHAT IS ALZHEIMER'S?

All information and data for the causes I obtained from the following sources: -

http://www.alz.org/research/science/major_milestones_in_alzheimers.asp

http://en.wikipedia.org/wiki/Alzheimer_disease

<http://www.brightfocus.org/alzheimers/about/understanding/history.html>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; *Alzheimer's and other dementia's* pg. 18-20

First described in 1906 by German neurologist Dr. Alois Alzheimer as: "**an unusual disease of the cerebral cortex (the outermost layered structure of neural tissue of the brain)**" (Alzheimer's disease International online) after he observed changes in the brain tissue of a woman in her 50s called Auguste D, who had died of what was thought to be an unusual mental illness. These abnormal brain tissue changes are now known to be the characteristic features of Alzheimer's disease.

Alzheimer is the most common form of dementia (a syndrome associated with an ongoing decline of the brain and its abilities) affecting 496,000 people in the UK and around 44 million worldwide according to NHS choices (*as of 26.03.2014*). It's a progressive disease which means that as time progresses, more damage occurs to the brain; during the course of the disease protein 'plaques' and 'tangles' develop in the structure of the brain, leading to the death of brain cells.

CAUSES

All information and data for the causes I obtained from the following sources: -

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Causes.aspx>

http://www.alz.org/research/science/alzheimers_disease_causes.asp

<http://www.alzheimers.org.uk/site/scripts/documents.php?categoryID=200345>

http://en.wikipedia.org/wiki/Alzheimer_disease

Warner, Dr James Cayton, Harry & Graham, Dr Nori; *Alzheimer's and other dementia's* pg. 23-26

The disease is caused by parts of the brain wasting away which damages the brain's structure and its function. The causes of Alzheimer's aren't exactly known as at the present time a great deal still remains to be discovered about why people develop the disease and is currently an important area of research.

Presently, people with Alzheimer's have been found to have abnormal amounts of amyloid plaques (proteins), tau tangles (fibres) and a chemical called acetylcholine in the brain. These reduce the effectiveness of healthy nerve cells that carry messages to and from the brain, gradually destroying them. Over time, this damage then spreads to other parts of the brain such as the grey matter; responsible for processing thoughts and the hippocampus; responsible for memory.

Although it is still unknown what triggers the characteristic changes that occur within the brain of those who have Alzheimer's, there are several factors which have been known to increase the risk of developing the disease.

AGE

It's known that age is the single most significant factor in the development of the disease as it becomes more common with an increase in age. The likelihood of developing the disease doubles every 5 years after reaching the age of 65. However it is not known how/if age is one of the factors that triggers the characteristic changes that occur in the brain tissue of those who have the disease as these brain changes are not part of the normal ageing process; in some cases, these characteristic changes occur at a relatively early age. Around 1 in 20 people with Alzheimer's disease are under 65. This is known as early-onset Alzheimer's disease and it can affect people from around the age of 40.

FAMILY HISTORY

Another contributing factor is family history. There is a hypothesis that the genes that you inherit from your parents can contribute to the risk of developing Alzheimer's; scientists are currently investigating the genetic background to Alzheimer's. However, according to the Alzheimer's Society there are a small number of families where there is a very clear inheritance of the disease from one generation to the next. This is often in families where the disease appears relatively early in life. Nonetheless, in the vast majority of cases the influence of inherited genes for Alzheimer's disease in older people appears to be smaller. Individuals, who have parents or relatives with the disease, have a greater chance of developing the disease than who do not.

GENES

Recent research on genes has shown a link between Alzheimer's and the gene Apolipoprotein E (ApoE). The ApoE gene consists of 3 types of ApoE – e2, e3 and e4, which provides the blueprint for a protein that carries and regulates cholesterol in the bloodstream. Each person inherits an ApoE gene (either e2, e3 or e4) from each parent. It seems that people who carry two ApoE-e4 genes (one from each parent) have a higher risk of developing Alzheimer's.

Estimated worldwide human Allele frequencies of ApoE			
Allele	e2	e3	e4
General Frequency	8.40%	77.90%	13.70%
Alzheimer's diseases Frequency	3.90%	59.40%	36.70%

I found the following statistics about the human frequencies of ApoE from <http://en.wikipedia.org/wiki/Apolipop>

Abnormalities of 3 other genes – presenilin type 1 (PS1), presenilin type 2 (PS2) and amyloid precursor protein (APP) – have been identified as causes of the rare inherited form of the disease, but it is not clear how they do this.

MILD COGNITIVE IMPAIRMENT

Mild Cognitive Impairment (MCI) is also believed to be a factor which contributes to Alzheimer's. MCI is a condition where the individual had mild, measurable changes in thinking abilities that are noticeable to those around them whilst not affecting the individual's ability to carry out every day activities. Those with MCI involving memory problems are more likely to develop Alzheimer's (c.10% each year) and consequently a diagnosis of MCI does not always mean that the person will go on to develop Alzheimer's.

OTHER FACTORS

There are also several other factors which have been found through research, which link to the development of the disease, such as:

- Down's syndrome: - People with Down's syndrome have an extra chromosome 21 which contains a gene that creates APP in the brain which occurs in Alzheimer's.
- Whiplash and head injuries: - People who have suffered from a severe head injury or whiplash have been found to be at a higher risk of developing Alzheimer's.
- Cardiovascular disease: - Research has shown that certain lifestyles and choices such as smoking which are associated with cardiovascular disease can increase the risk of Alzheimer's.

A number of research findings have suggested a possible link between the disease and Aluminium which include; the presence of aluminium deposits found in the tangles and plaques in the brains of those who suffer from the disease. Nonetheless, there is only weak or circumstantial evidence for linking Aluminium with the development of Alzheimer's.

According to the NHS and the Alzheimer's Society, there are several stages of Alzheimer where symptoms develop slowly over a period of time. They are often similar to those of other conditions such as old age or stress. The rate at which the symptoms develop can differ from person to person and it's not possible to predict exactly how quickly the disease will progress. It's believed that in some cases, the worsening of symptoms can be due to certain medications or infections.

SYMPTOMS

All information and data for the symptoms I obtained from the following sources: -

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Symptoms.aspx>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 27-32

http://www.alz.org/alzheimers_disease_know_the_10_signs.asp

http://en.wikipedia.org/wiki/Alzheimer_disease

<http://www.alzheimers.org.uk/site/scripts/documents.php?categoryID=200341>

Generally the symptoms are divided into 3 main stages; Early, Middle and Late stage. However it can be difficult to exactly place someone who suffers from Alzheimer's into a particular stage and examples of some of the symptoms are shown below:-

Early	<p>The main Symptom of the disease in the early stage is memory lapses such as:-</p> <ul style="list-style-type: none"> • Forgetting recent events or conversations • Forgetting the names of places and objects • Repeating themselves regularly • Find it hard to make decisions • Signs of mood changes, such as increasing anxiety or agitation, or periods of confusion.
Middle	<p>As the disease develops, memory problems will get worse and someone with the condition may find it increasingly difficult to remember the names of people they know and may struggle to recognise their family and friends. By this stage, someone with Alzheimer's disease will usually need support to help them with daily tasks such as with eating, washing getting dress etc. They may also develop other symptoms such as:-</p> <ul style="list-style-type: none"> • Increasing confusion and disorientation i.e. walking off and getting lost • Obsessive, repetitive and impulsive behaviour as well as delusions • Problems with speech or language (aphasia) • Frequent mood swings, depression and feeling increasingly anxious, frustrated or agitated (possibly from disturbed sleep) • Difficulty performing spatial tasks, such as judging distances • Problems with eyesight, such as poor vision or hallucinations
Late	<p>In the later stages of the disease, the symptoms become increasingly severe. This becomes very distressing for the person with the disease and those around them. During the severe stage of Alzheimer's disease, people often start to neglect their personal hygiene. It is at this stage that most people with the condition will need to have full-time care because they will be able to do very little on their own. Other symptoms include:-</p> <ul style="list-style-type: none"> • Hallucinations and delusions which will become worse; friends and family may see a change in personality, such as becoming violent. • Dysphagia • difficulty changing position or moving around without assistance • considerable weight loss/ gain • unintentional passing of urine or stools • gradual loss of speech • significant problems with short- and long-term memory

WHO IS AFFECTED?

All information and data for who's affected I obtained from the following sources: -

http://en.wikipedia.org/wiki/Alzheimer_disease

http://www.alz.org/downloads/facts_figures_2014.pdf

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Realstoriespage.aspx>

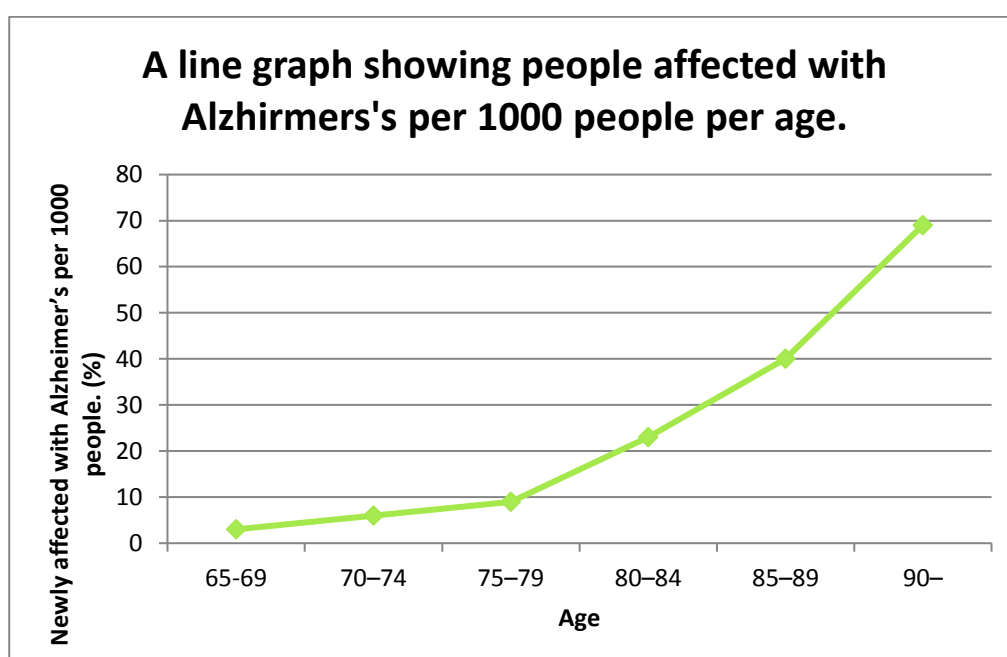
Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 21-23

http://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=535&pageNumber=2

<http://www.alzheimers.org.uk/statistics>

Alzheimer's is rare in younger people with around 3.43% of those who suffer from it below the age of 65 (17,000). Advancing age is a primary factor for the disease and the numbers of people affected by the disease are not equal for all ages. According to a recent Cohort study, the risk of getting the disease approximately doubles, increasing from 3% to as much as 69% per 1000 people.

Age	65-69	70-74	75-79	80-84	85-89	90-
New affected with Alzheimer's per 1000 people. (%)	3	6	9	23	40	69



I found my statistics from http://en.wikipedia.org/wiki/Alzheimer_disease

Up to the age of 65, Alzheimer's develops in approximately 1 out of 1,000 people. In those above 65, the disease becomes more common affecting around 3 out of 100 people. Over the age of 80 years, this figure rises to 10/15 out of 100 people developing the disease.

It is believed that around 60% more women have Alzheimer's than men over the age of 65. Some scientists have suggested that it's due less mitochondria being present in women as they increase in age. With less mitochondria, fewer women are protected against amyloid-beta toxicity. As a result, oxygen

species are produced and release less apoptogenic signals than those from male and as a result more likely to develop the disease than men

According to Larry Cahill, a Professor of Neurobiology at The University of California; he believes one of the reasons why more women develop Alzheimer's than men is due to the decreasing amount of the hormone oestrogen (a hormone which seems to protect the brain) found in the body due to the menopause. Linking with this, Professor Walter Rocca, a neurologist at the Mayo Clinic in Minnesota has found that women who have had their ovaries removed before naturally moving into the menopause have a greater risk of developing Alzheimer's by 40%. Correspondingly, Professor Rocca found that given oestrogen replacement to women who had lost their ovaries appeared to reduce the risk of developing the disease; but this is being investigated further as oestrogen isn't the only hormone involved.

There have also been several other theories as to why women suffer from Alzheimer's more than men, one theory is due to the location of the 'plaques' and 'tangles' in the brain. According to scientists in the University of California, 90% of men who suffer from the disease have the plaques and tangles have them in the hypothalamus (a central area of the brain controlling factors such as hunger and eating); whereas women tend to have them in a nearby area involved in controlling production of a neurochemical called acetylcholine. These scientists have shown that the same number of tangles in the brain caused more severe symptoms in women than in men and that women deteriorate at a faster rate than men even when they are both at the same stage of the disease. They have suggested that this could link to the reason why women suffer from Alzheimer's more than men. However more research is required in order to investigate these theories as the hormonal cycles of women are believed to be more complicated than those in men.

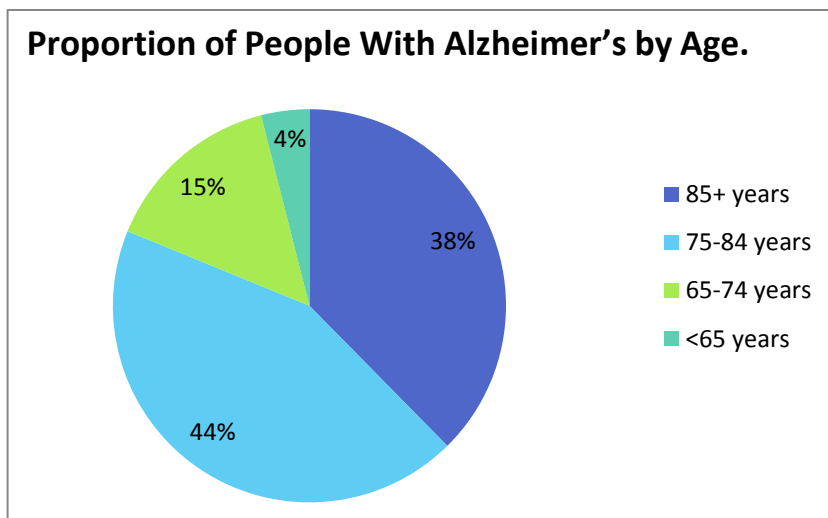
Research has shown that those with a certain variant gene called ApoE4 are 50% more likely to develop Alzheimer's. Someone aged 70 with no family history has a 1 in 50 chance of developing the disease during their 70th year. This would increase to about 1 in 20 in someone with a close relative who had Alzheimer's.

People with Down's syndrome contain an extra chromosome responsible for creating APP and according to **Alzheimer's and other dementias**, it is thought that over 50% of people with Down syndrome over the age of 40 have Alzheimer's.

Alzheimer's Association have stated "1 in 9 people age 65 and older and around one-third of people age 85 and older have Alzheimer's disease; Of those with Alzheimer's disease, the vast majority are age 75 or older."

The World Health Organisation stated in 2005, 0.379% of people worldwide had Alzheimer's and estimated this value would increase to 0.441% in 2015 and 0.556% in 2030.

Currently there are 496,000 people in the UK who have Alzheimer's (and a further 304,000 have other forms of dementia) in the UK and there are as well, over 15,000 people from black and minority ethnic groups in the UK who suffer from this disease and both numbers are increasing. The increase is partly due to the early and better diagnostic of the disease, but also due to people now living a longer life and reaching an age at which the risk of developing Alzheimer's has increased. According to the Alzheimer's Society, there will be over a million people in the UK with dementia by 2021.



I found my statistics from: - http://www.alz.org/downloads/facts_figures_2014.pdf

DIAGNOSIS

All information and data for who's affected I obtained from the following sources: - http://en.wikipedia.org/wiki/Alzheimer_disease
<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Diagnosis.aspx>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 33-54

As Alzheimer's develops slowly, people may have suffered from the disease for a long period of time before diagnosis. Currently only 44% of people in England, Wales and Northern Ireland receive a diagnosis; however 1 out of 10 people in the UK do not receive a diagnosis.

According to *“Alzheimer's and other dementias, third edition 2010”*; there is no specific test to diagnose Alzheimer's but instead there are various tests and investigations which can help indicate whether or not the person suffers from the disease. Early diagnosis is very important in regard to the life of the person suffering from the disease and the family around them as carers who are able to plan for the future in regards to care and financial help as the disease progresses and will be more prepared for what will happen in the future. The sooner treatment starts, the better quality of life a person will have.

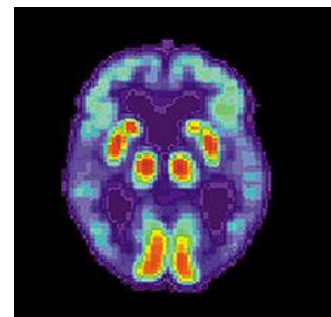
When the first symptoms of Alzheimer's appear, a diagnosis is very important as it could be ruled out that their symptoms could be attributed to a different, more easily treatable cause such as depression or a hormone problem. A diagnosis is usually made on the basis of the person's symptoms and mental abilities; a doctor will undergo a process with the patient known as 'history taking' in order to obtain as much information as possible. There may also be a more formal assessment of the patient's physical and mental conditions and needs.

As explained, it is very difficult to make a conclusive diagnosis, and due to this a full physical examination and various tests are carried out which include blood tests and a brain scan. If these tests fail to show any other reasons for the person's symptoms, the doctor will often make the diagnosis of Alzheimer's after observing how the patient's conditions develop over a period of time.

One of the screening tests undertaken for Alzheimer's (and other forms of dementia) is the Mini Mental State Examination which takes approximately 5-6 minutes, where those involved are asked a series of questions to test their memory, orientation as to time and place, understanding and language ability. This test is useful for monitoring people's mental abilities in the early stages of the disease.

Blood tests are also used as a screening test for Alzheimer's. The majority of cases cannot be diagnosed by a blood test; however the test is still carried out to make sure that the symptoms do not have a treatable cause or if the patient suffers from other illnesses such as anaemia, diabetes or HIV, which are possible cause of Alzheimer's (and other dementias) in young people. A blood test is also used to identify is someone who has a family history of Alzheimer's, is carrying the gene which has caused Alzheimer's within the family.

Sometimes, a MRI scan of the brain is carried out by doctors when diagnosing patients. The scan may show some shrinkage of the brain, but this can occur in people who do not have Alzheimer's. It is completed by doctors to make sure that the patient doesn't have any form of brain tumour and to discover if a person is suffering from vascular dementia rather than Alzheimer's. Picture A illustrates a scan of the brain of a person with Alzheimer's showing a loss of function in the temporal lobe.



Picture A

I obtained picture A from http://en.wikipedia.org/wiki/Alzheimer_disease

TREATMENT AND PRACTICAL DAY TO DAY CARE

All information and data for who's affected I obtained from the following sources: -
http://en.wikipedia.org/wiki/Alzheimer_disease
<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Treatment.aspx>
<http://www.alzheimers.org.uk/treatments>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 55-66

As the disease progresses, routine tasks such as dressing, washing and using the toilet become increasingly difficult for people to perform on their own; however there is a variety of support available to aid families of those who suffer from Alzheimer's as well as the patient.

There are many healthcare professionals such as GP's, Psychiatrist and social care services which are available to provide help in drawing up and implement care plans and they support patients by ensuring they remain as independent as possible. There is also guidance, assistance and grants available to modify their homes if required. Occupational therapists are able to identify potential problems, where patients require grab bars and handrails to help them around the house. There are also psychological treatments, such as cognitive stimulation, which could help improve the memory.

Due to research, medication is now available which can temporarily reduce some of the symptoms and in some people, slow down the progression of the condition. These include donepezil, galantamine, rivastigmine and memantine (AChE inhibitors) the stage of the condition dictates the medication used.

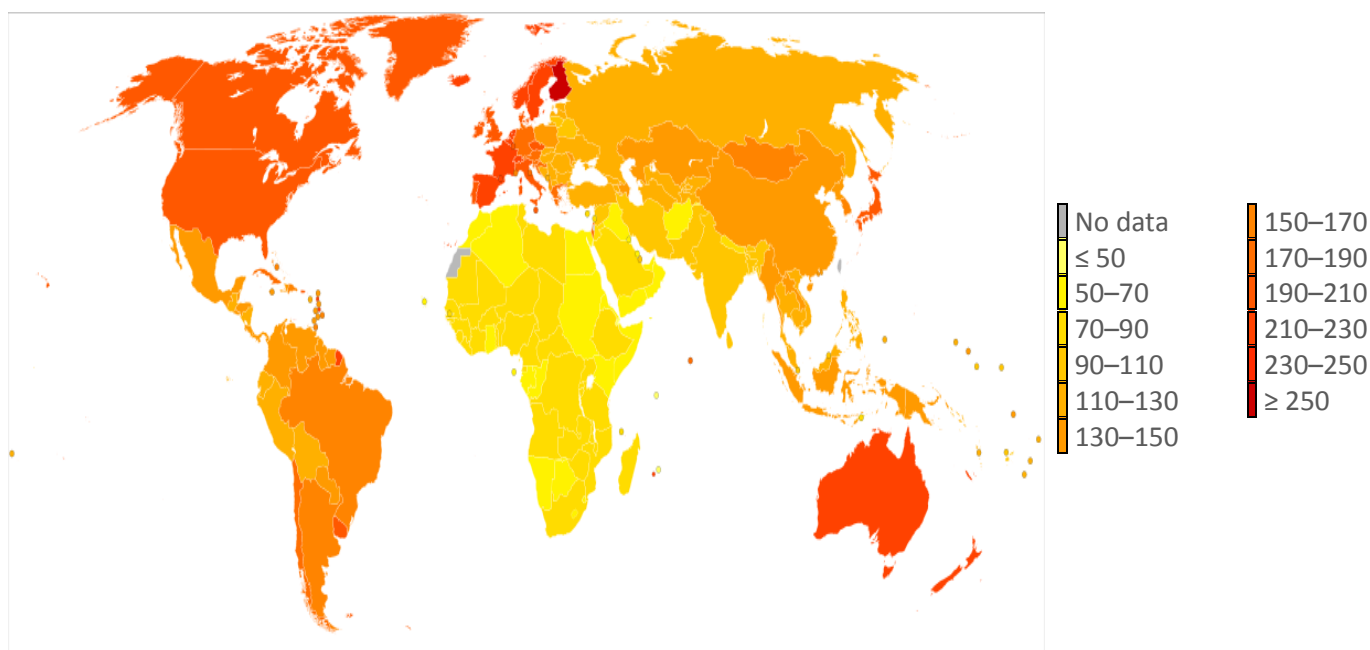
Cognitive behavioural therapy and relaxation therapies are available and these help reduce any depression, anxiety, agitation, hallucinations, delusions and challenging behaviour that are often associated with Alzheimer's.

As well as help provided by the NHS and local authorities, there are various local and national Alzheimer's support group such as the Alzheimer's Society and the Alzheimer's Association which are available to provide information and advice about living with Alzheimer's.

Eventually, due to Alzheimer's being a progressive and incurable condition, palliative care is needed towards the later stages of the disease. This can come in the form of care at home, a hospice, a care home or hospital.

Currently 80% of people in the UK, living in care homes have Alzheimer's or another form of dementia and two thirds of the population with Alzheimer's live in the community and one third live in a care home. It is estimated that Alzheimer's and other form of dementia cost the UK £23 billion a year.

Below is a map showing the Disability-adjusted life those with of Alzheimer and other dementias per 100,000 inhabitants. I obtained the map and data from http://en.wikipedia.org/wiki/Alzheimer_disease



CASE STUDY

In order to truly understand the effects Alzheimer’s has on a person, I have decided to compare the lives of my great aunt and grandmother at the current moment. Both are very similar in age with my grandmother being 85 and my great aunt 86, with 18 months between them. My comparisons are shown in the table below:-

My Grandmother	My Great Aunt
<ul style="list-style-type: none"> • Currently living at home with my grandfather. • She can be quite forgetful such as forgetting the time of hospital appointments, but nothing extreme • She can complete the majority of daily tasks without any aid (apart from living heavy things) • Some restrictions to her mobility due to problems with her knees and arthritis. 	<ul style="list-style-type: none"> • Currently living at home with my great uncle and has daily carers to assist with tasks such as, washing and getting dressed • She is very forgetful and gets confused very easily – for example calling me by my mother and grandmothers name rather than by own • Loss of short term memory and can only recall past events • She has a tendency to wander and get confused by her surroundings • Her moods tend to change quickly

Despite being very similar in age, it surprises me how different their lives are and to an extent how they are treated; for example you could leave my grandmother on her own to get dressed, whereas with my great aunt, especially on one of her bad days couldn’t complete the task without any aid, whether it’s physical help or encouragement.

LIFE EXPECTANCY

All information and data for who’s affected I obtained from the following sources: -

http://en.wikipedia.org/wiki/Alzheimer_disease

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer’s and other dementia’s pg. 176-183

No one person is affected exactly the same by the disease; some could live 4 years after being diagnosed others 20 years. It’s estimated that the average life expectancy succeeding diagnosis is seven years. Worldwide, fewer than 3% of the population live more than 14 years. One of the main reasons why many have a lower life expectancy is because patients are unable to look after themselves and other illnesses develop due to this. However, if the disease is diagnosed earlier, the life expectancy is longer. But life expectancy is reduced when you compare patients with Alzheimer’s within the same age group of the healthy population. It has also been shown that men have a less favourable prognosis than women. According to the NHS, Alzheimer’s is the underlying cause of death in 70% of all cases. 60,000 deaths a year are caused directly by Alzheimer’s and other dementia.

DELAYING THE ONSET

All information and data for who's affected I obtained from the following sources: -

http://en.wikipedia.org/wiki/Alzheimer_disease

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Prevention.aspx>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 167-173

Of those who are diagnosed in the UK with dementia, 62% suffer from Alzheimer's and approximately 7.7 million people will develop some form of dementia worldwide each year. It's estimated that this number will double every 20 years, rising to 115.4 million in 2050.

As the exact cause of Alzheimer's is still unknown, there is no way to prevent the condition. However according to NHS direct, there are very simple steps that many can take that may help to delay the onset of the disease. These include:-

- Stop smoking
- Avoiding drinking large amounts of alcohol
- eating a healthy balanced diet, including at least five portions of fruit and vegetables every day
- Exercising for at least 150 minutes (2 hours and 30 minutes) every week by doing moderate-intensity aerobic activity (such as cycling or fast walking) – this will improve both your physical and mental health
- Make sure your blood pressure is checked and controlled through regular health tests
- If you have diabetes, make sure you keep to the diet and take your medication
- Stay mentally active by completing activities such as reading or participating in a sport/ playing an instrument.

RESEARCH

All information and data for who's affected I obtained from the following sources: -

http://en.wikipedia.org/wiki/Alzheimer_disease

<http://www.alzheimersresearchuk.org/>

<http://www.alzheimers.org.uk/research>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's pg. 195-203

Currently, there is ongoing worldwide research into Alzheimer's, as more is revealed about the condition, other ways to treat and/ or prevent it may be found. By delaying the onset of Alzheimer's by five years, this would halve the number of deaths from the condition, saving 30,000 lives a year.

The need for research is urgent as people are living longer and the number of people with Alzheimer's. The need to care for people with Alzheimer's and other forms of dementia takes a toll both on individuals doing the caring and on the government providing the resources.

Alzheimer's and other forms of dementia are one of the main causes of disability later in life, ahead of cancer, cardiovascular disease and stroke. As a country we spend much less on all aspects of dementia, whether its research or treatment, than on these other condition; the research is desperately

underfunded. The government invests eight times less in dementia research than cancer research. In 2007-08 cancer research received £248.2 million, while dementia research received just £32.34 million.

Currently Alzheimer's Society has £6.5 million invested in dementia research to improve care for people today and find a cure for tomorrow. In the UK, we aim to increase our annual investment in research to more than £10 million by 2017.

CONCLUSION

As quoted by David Cameron June 2014, "**Alzheimer's is the plague of the 21st Century**", which I believe is true. It's a disease which affects thousands in the UK and millions worldwide, yet we cannot cure it or prevent the disease from developing. The UK has an aging population, and more people are living longer and we are seeing more and more people, including family and friends such as myself, being affected, and we can do nothing about it. We are losing people we know and love to a disease we know little about.

The title of this report is health care and society and I choose Alzheimer's not only due to my personal reasons and because it's an area I am interested in; I thought it was very fitting to the title as Alzheimer's has had a profound effect on both healthcare and society, especially in the UK. Millions of pounds every year go towards the research of Alzheimer's in hospitals. Money is also invested in the treatment of Alzheimer's at home during the early stages or palliative care in residential homes in the final stages of the patient's life. As the UK's population grows older, the disease will have a bigger impact on the NHS here in the UK and other health care services worldwide.

Every 67 seconds, someone is diagnosed with Alzheimer's worldwide, that means approximately 470,999 people are diagnosed each year alone and this shows the impact this disease has on everyone in society. The disease affects not only the person suffering with Alzheimer's but also family, friends and carers. Almost 2% of the taxes paid by the population in this country go to the research of the disease. , Alzheimer's still affects people in less developed countries, it's not given priority and is not commonly reported compared to well-developed countries in Western Society. It will continue to affect us all until a cure or a way to prevent it is discovered.

By Cara Macey

BIBLIOGRAPHY

http://en.wikipedia.org/wiki/Alzheimer_disease

<http://www.alzheimersresearchuk.org/>

<http://www.alzheimers.org.uk/research>

Warner, Dr James Cayton, Harry & Graham, Dr Nori; Alzheimer's and other dementia's, 2010

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Prevention.aspx>

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Treatment.aspx>

<http://www.alzheimers.org.uk/treatments>

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Diagnosis.aspx>

http://www.alz.org/downloads/facts_figures_2014.pdf

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Realstoriespage.aspx>

http://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=535&pageNumber=2

<http://www.alzheimers.org.uk/statistics>

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Symptoms.aspx>

http://www.alz.org/alzheimers_disease_know_the_10_signs.asp

<http://www.nhs.uk/Conditions/Alzheimers-disease/Pages/Causes.aspx>

http://www.alz.org/research/science/alzheimers_disease_causes.asp

<http://www.alzheimers.org.uk/site/scripts/documents.php?categoryID=200345>

<http://www.brightfocus.org/alzheimers/about/understanding/history.html>