THE UNIVERSITY OF NORTHAMPTON
School of Health

PGMS ☐ CAF ☐ OTHER ☐ Assignment Submission Sheet

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Essay ☐ Seminar ☐ Poster ☐ Examination ☐ Dissertation ☐ Other ☐

Assignment Number and Title: 1st A literature review of the effects of Parkinson's disease on the elderly

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Student Declaration: This is to certify that the attached work is my own. All external references and sources are clearly acknowledged and identified within the contents. I am aware of the University of Northampton regulations concerning plagiarism and collusion.

Student Signature…….…… Date……

Note: In the case of group work, all group members must sign the above declaration.

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A literature review of the effects of Parkinson's disease on the elderly

The aim of this literature review is to write a multi-disciplinary review on the elderly and Parkinson's disease. Parkinson's disease is a slowly progressive disorder that affects movement, muscle control, and balance this is because it is a degenerative disease of the brain that affects nerve cells. Parkinson's disease is referred to as idiopathic, which means that the cause is unknown. In addition to its effects on motor control, Parkinson's disease is now recognized as a broader condition that can include cognitive and behavioural disturbances, sleep disorders, speech difficulties, and other problems. The key themes in this review include the diagnosis of Parkinson's disease and how reliable is diagnosis, whether Parkinson's causes dementia and also the treatment/relief of Parkinson's disease.

To review the literature review the following approaches were made. Three electronically databases were searched: Journals@Ovid FT 2000-2007, AMED 2000-2007 and the BMJ 2000-2006 to find the relevant information for this review. This was done using the following search terms; elderly, later life, over the age of 80, Parkinson's, Parkinson's disease, Parkinson's disease diagnosis, parkinsonism, Parkinson's disease dementia, dementia, cause and symptoms. Also a search was done on "Google" for articles and health sites using the same search terms as for the electronic databases. Some of the main sites used were NHS, BBC articles and Parkinson's disease society/association.

It is known that the average age for developing Parkinson's disease is around the age of 65 years old and one in 10 of these sufferers develop it in there 40s and 50s. The European Parkinson's Disease Association (EPDA, 2006) found that Parkinson's affects around 6.3 million people suffer from Parkinson's disease and that one in ten percent are diagnosed before they are 50.

Symptoms of Parkinson's disease appear slowly and develop over time there are so many symptoms of this disease the four main ones are shaking, stiff muscles, slow movement and balance but they can appear in no particular order and at any time. But not everyone who has Parkinson's disease will get all the symptoms and each sufferer

will have different reactions to treatment.

Looking at four studies that look at the accuracy of diagnosis of Parkinson's disease from a

Community-based population shows that three of the studies (Schrag *et al.*, 2002., Meara *et al.*, 1999., Lees *et al.*, 2001) were done by a specialist and that the diagnosis of Parkinson's disease was based upon the UK PDS brain bank criteria. But in the other study (Jankovic *et al.*, 2000) the experts diagnosis was based on the investigator's confidence in the diagnosis that the patient had Parkinson's disease by the presence of atypical features, findings of imaging studies, response to levodopa and also the results of autopsy examinations. The criteria for the initial diagnoses were not specified in any of the studies. These studies were also performed on prevalent rather than incident PD populations. These studies only provide detailed evidence on the diagnosis ability of the experts against the non-experts. However, they show that the diagnosis of Parkinson's disease is can be wrong and is quite a hard disease to test for many cases of diagnosed or undiagnosed Parkinson's may have the wrong diagnosis. As there is also a disease called Parkinsonism which is a term uses to distinguish Juvenile Parkinson or other diseases that have the same symptoms as Parkinson's disease but is not Parkinson's disease. Parkinson's disease is only applied to patients who have a disease that, at autopsy, is characterized by a loss of cells in the substantia nigra and the presence of Lewy bodies in the remaining (and presumably degenerating) cells (Lieberman, 2004).

Bonuccelli (2004) wrote a paper on Parkinson's disease and dementia he found that about forty percent of patients that have Dementia also suffer from Parkinson's disease. The development of dementia in patients with Parkinson's is up to six times that in a healthy person. A journal written by Marinus *et al*. (2003) backs up this information that forty percent of Parkinson's sufferers also have dementia it also states that the pattern of cognitive decline in Parkinson's disease is different than that from that found in Alzheimer's disease. There are two different types of dementia that is found in patients with Parkinson's disease. The first one develops when Lewy bodies occupy the brain and the brain stem. The more prevalent type is caused by Lewy bodies in the brainstem and Alzheimer's changes in the brain. Both of these types of dementia medicines can help to improve the early symptoms, although some of the anticholinergic drugs may actually increase cognitive problems (Hubble, 2004).

This may suggest that dementia may be caused by something other than Parkinson's disease this include delusions and language difficulties. If these factors are present, tests can be done like looking for Vitamin B-12 deficiency or an under active thyroid gland. Depression is also common symptom in Parkinson's disease patients and can show the same symptoms as dementia and so anti-depressant tablets can often help (Merino, 2004).

For years doctors were searching for a treatment for Parkinson's disease since it was discovered about 2000 years ago. It was not until the late1960 that pharmacological therapy was discovered. This treatment involved the administration of a drug such as L-dopa that acts as dopamine this will enhance the dopamine levels is the surviving cells that have not been damaged by Parkinson's disease. This treatment noticeably reduces tremors and increases movement but it only delays the disease and does not cure it. So other treatments were searched for including electrical stimulation which also reduces the symptoms. Then in the 1980 researchers began transplanting dopamine-containing cells such as stem cells which has given some Parkinson sufferers remarkable symptom relief (Rosenzweig *et al.* 2005). Today researchers still do no not fully understand stem cells but they know that it can be used for curing age related diseases such as Parkinson's disease and there are some expects that believe that it can reverse the effects of aging. Stem cell treatment is still being researched and a cure for Parkinson's has not been discovered from it (Blanplain *et al.* 2004). Several newspapers reports have been written by various newspapers on the possible new breakthrough in the treatment of Parkinson's disease.
They all talk about in different amount of detail about the drugs and technique used to improve the amount of dopamine that is produced in the brain in order to fix the damaged brain cells. Most of the articles include information about the causes of Parkinson's disease, they talk about the importance that dopamine has for controlling movement of the body. The technique where the growth factor glial-derived neurotrophic factor (GDNF) is pumped into the area of the brain where it can act to improve the production of dopamine has been tried in five patients with advanced Parkinson's disease. It has been found to have significant positive effects on both the symptoms of Parkinson's disease and on the growth of dopamine-producing brain cells (Coles, 2002)
All the articles talk about how successful these new drugs and technique appears to

be, but many only focus on the story of treatment that has only been tested on one patient, but most do emphasise the preliminary nature of research. The articles in The Sun does not fully describe the experimental treatment while, of the more extensive reports, most make it clear that the treatment may not lead to a long-term cure and may only help for a couple of months and may not work on all sufferers as stated in The Daily Telegraph (Derbyshire, 2002). But in The guardian it also states that it is the first time that patients have shown such encouraging response from pumping the drug GDNF into the brain as it (Meikle, 2002). Then in 2003 it was found that GDNF did work and was being prescribed to patients in America and had also been funded to have trial in Bristol. It helped patients with Parkinson's disease to walk talk and even smile again. But then suddenly in 2004 it had to be taken of the market as researchers found that it caused brain damage and so research is still being done today to try and find a way to ease and treat Parkinson sufferers (Murfitt, 2006).

Parkinson develops around the age of 65 and around 6.3 million people suffer from the disease. The patient may have Parkinson's disease long before they are diagnose with it as it comes on slowly and develops over time but there are four main early symptoms that someone close or a family member may notice before the sufferer realises there is something wrong. It is difficult to diagnose Parkinson's and it may be misdiagnosed the best way to find out whether a patient has Parkinson's disease is an autopsy which can take months to get an appointment for. Research need to be done to get patient a better diagnosis of this disease rather than mistreating many patient which can be stressfull for both the patient and the carer.

Parkinson's disease dementia affects around forty percent of Parkinson's sufferers and those who suffer from Parkinson's disease are six times more likely to have dementia than a healthy adult over the age of 50. It has been proven that there is a 10 to 15 year time lag between getting Parkinson's which normally occurs first and then dementia. Parkinson patient are found with one of two types of dementia, one where the Lewy bodies occupy the brain and the brain stem and the other being Lewy bodies in the brainstem and Alzheimer's changes in the brain. Some drugs used to treat dementia actually increase the cognitive patients with Parkinson's disease rather than improve the symptoms of dementia. And so this shows that dementia may not actually be caused by Parkinson's but some other problem associated with the

Parkinson's. More research should go into this topic as there iss very little information about Parkinson's and dementia only that it can occur in Parkinson sufferers.

A cure for Parkinson's should be available at some time in the future or a very good treatment to stop the disease progressing but to achieve this scientists and patients must work closely together this is very important as each Parkinson's sufferer is different and reacts to treatment differently. GDNF is a hugely exciting the concept of using growth factors delivered specifically into the brain could be applied to other neurological conditions but so much work and research must still be done to find the right treatment for Parkinson's disease sufferers. Further research that cam be looked at is why each Parkinson's disease sufferer reacts differently to treatment and more participants taking place in trial rather than just testing on a sufferer.

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