

Dementia and life long learning

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Dementia is a condition characterised by a set of symptoms that usually includes memory problems, loss of executive functioning, aphasia, agnosia or apraxia. We estimate that 700,000 people have dementia in UK. A range of diseases of which Alzheimer's disease is the most common and accounts for 60%, vascular dementia the second most common with 20 – 30% cause the condition. Less common diseases that cause dementia are Lewi body dementia and Frontotemporal dementia followed by a large number of very rare diseases. There is an overlap between vascular dementia and Alzheimer's disease with many people having both. There is currently no cure for the diseases that cause dementia. It is a fatal condition. There are drugs that may help manage the condition for a period and controlling vascular disease may also help.

As the dementia progresses, many patients develop very challenging behaviour and it is often this that force the family or carers to transfer them to a nursing home. Alzheimer's disease (AD) is arbitrarily divided into early onset, when diagnosed in people under 65 years and late onset or sporadic AD when diagnosed in people over 65. AD is relatively rare in people under 65 years, but the best estimate is that 1 in 20 of people between 65 and 80 have dementia and 1 in 5 of people over 80 have dementia. In people over 90 it is estimated that 40% have dementia. We are referring to estimates, because many people do not get a diagnosis before the time of a move to a care home. Additionally, many people with a 'diagnosis' of dementia do not get a diagnosis for a dementia causing disease. There are no laboratory tests for dementia. Most patients are diagnosed through observation and the MMSE (mini mental state examination).

The classic pathology of Alzheimer's disease is the observation of plaques and tangles in the brain and it has been seen as the only certain diagnosis of the disease. However, recent larger post mortem studies have demonstrated during that many people have a significant load of plaques and tangles although they died with no symptoms of dementia. It is now widely believed that in people susceptible to AD, the plaques and tangles start forming long time before the symptoms appear. There seem to be no straight forward correlation between the plaque and tangle load observed at post mortem and the severity of symptoms experienced in the year before death. It is possible that the onset of dementia in AD requires another trigger as well as a certain load of plaques and tangles.

Much of the data regarding education and dementia that we have come from cohort studies that were originally set up to investigate something else. Mostly the cohorts that have been followed for 20 years or more and that are following people now in their 70s or 80s were initially set up to study heart disease. So we depend to some extent on the questions that were asked originally. Many of these cohorts have had extra studies bolted on asking further questions retrospectively. There are two very interesting studies carried out in Scotland at the moment linking early educational achievement, intelligence test data carried out in the cohorts of 1921 and 1936 and the risk of dementia. Some data have now been published indicating that people are remarkably stable in their abilities and that the higher scorers are also the survivors.

So what do we know about dementia and education? We know that people with a higher level of educational achievement experience onset of dementia later than people with lower educational achievements. We also know that the dementia, once diagnosed, progresses much faster in people with higher educational achievement. This has led clinicians and psychologists to talk about people with higher education having a bigger cognitive reserve. We think this group probably develop dementia in the same way as the other, but that people with a bigger cognitive reserve can mask the symptoms of their developing dementia for a while. However, when they cannot cover up the symptoms any more, they may be further in to the dementia and it may therefore seem that they progress faster.

There are also cohort studies that have looked at the use it or lose it hypothesis. We know that exercise and healthy diet are linked to delayed onset or reduced risk of dementia. Many studies have not separated Alzheimer's disease from vascular dementia and there are more recent studies that may indicate that these factors may have a stronger preventative effect for vascular dementia than for AD. However, we would like to extend the understanding of whether keeping the brain active as we get older prevents or delays dementia. There are data from several studies that seem to indicate that older people who take part in leisure activities (dancing, card playing, adult education, learning a foreign language etc.) are less likely to develop dementia, but it is very difficult to separate out whether these are also the people taking exercise and eating their five vegetables a day whilst having possibly started with a higher level of education.

The only set of studies linking learning to changes in the brain are the MRI studies on London taxi drivers. MRI imaging have demonstrated that London taxi drivers have enlarged hippocampi. However, the latest studies also demonstrated that they are slow to learn new spatial information. So the initial acquired learning may have been achieved at a cost.

In 2006 and 07 the marketing pressure from commercial brain training operators e.g. Nintendo has grown and many middle aged to older people actively engage in brain training using these programmes or in Sudoku or crosswords because they fully believe these activities may stimulate their

brain and prevent dementia. There is very little solid research evidence that this is the case.

We need solid research to investigate whether dementia may be delayed through keeping the brain active in general terms, whether it may be delayed through specific targeted activities or whether it is not possible to influence the onset of dementia in this way at all and only diet and physical activity are of any importance in this context.

There is another aspect of the theme of today of life long learning and my theme of dementia. That is the learning that may happen after people have received their diagnosis. Until recently people with dementia were diagnosed when their symptoms were well developed and it was assumed that nothing could be done for them. A number of smaller studies have demonstrated that it is helpful to people in early stages of dementia to receive training in how to manage their disease, to be provided with strategies to overcome their difficulties, to be assisted in developing their own systems that can support them in managing their symptoms. Again we need more innovation and more testing. This field is still very young. We need to start thinking of services that support people managing their dementia symptoms as long as possible rather than just containing them. These services are likely to include some appropriate learning.