

Introduction

"Old minds are like old horses; you must exercise them if you wish to keep them in working order".

(John Adams, President of the United States of America, 1735-1826).

There has been a focus in research on finding a cure for dementia, however, no cure is currently available and expectations for doing so may be 'overly optimistic'. This focus has perhaps led to an imbalance in the resources allocated to interventions to support people with dementia (Caspi, 2017). While scientists endeavour to develop a cure, people need support to live with the social, physical and emotional impacts of dementia. More research is needed into innovative health and social care practices and effective treatments, developed and delivered by interdisciplinary teams, that can possibly slow the decline of dementia and support people to live as well as possible with the condition. There is a need for greater psychosocial support to enhance cognitive performance, quality of life, and the 'dignity and personhood' of those currently living with dementia (Caspi, 2017).

More needs to be done to support the individual's existing mental capacities and personal capabilities. Lessons can perhaps be learnt from recent evidence suggesting that active engagement in intellectually stimulating activities can enhance cognitive ability, can slow cognitive decline and reduce the risk of developing a dementia (Marioni et al., 2015). One particularly innovative way of encouraging active engagement in such activities is by returning to the 'classroom'. The provision of adult education, underpinned by the concept of lifelong learning, is perhaps one way of enhancing the retained cognitive abilities of people with dementia, at least in the early stages.

The concept of lifelong learning is not unique for older people, with organisations such as the University of the Third Age providing opportunities for people who are retired or near retirement to continue to learn, develop, for social engagement and enjoyment. The benefits of lifelong learning have been found to support wellbeing, provide resilience to mental health issues, and enhance self-esteem and confidence (Laal & Salamati, 2012). Lifelong learning is considered a natural aspect of personal development and about being the best we can be, helping people to adapt to the changes which occur to and around us. Furthermore, lifelong learning is seen as an essential aspect of economic and social development (Laal & Salamati, 2012).

For people with dementia, the opportunity to take part in lifelong learning has been evidenced through short-term educational programmes. Such programmes, based on health promotion or arts, for people with dementia have reported positive outcomes in terms of quality of life, confidence, feelings of self-worth, a desire to learn and develop knowledge and to engage socially with others (Ullán et al., 2011). Furthermore, lifelong learning can support feelings of empowerment and foster enjoyment (Ullán et al., 2011). In Denmark, lifelong learning and education, through all 'life phases', is part of the country's cultural psyche. Most people engage in some form of continued education either formally, through work or as part of their leisure activities and the Ministry of Education prioritises this learning culture, aiming to ensuring its citizens have access to lifelong skills and innovative educational practice. An example of this innovative practice is the school of teaching and communication (VUK).

This paper presents a brief overview of the work carried out at VUK with people living with the early stages of dementia. It considers the underpinning philosophical approach and its synergy with the concept of lifelong learning. The people who attend the school are 'students' who have the capacity and interest to continue to learn, develop, and grow. The findings of an initial pilot project carried out by the teaching staff at VUK are considered in relation to cognitive stimulation training and cognitive training outcomes. Ultimately, the aim is to develop, implement, and evaluate a similar adult education initiative for people with dementia in the UK, based on this unique and innovative Danish model.

VUK School

VUK is situated in Aalborg, Northern Denmark. The school provides education and communication for young people with a learning disability but also has specific classes for people with dementia. VUK has offered education for people with dementia since 2000, in collaboration with the school department and the department for older people of Aalborg municipality, a unique collaboration between the two departments. VUK provides education in cognitive training, music and art therapy and a range of other classes including: woodwork, computing and history for people with dementia.

Currently, the school has 45 students with dementia and on average, students attend one day per week (4-6 lessons) for 3-4 years. Classes are delivered by qualified teachers. The students are assessed during their time at VUK and a programme of education is provided to meet their needs and interests. At such time that the school and the individual feel that the school is no longer a suitable option, due to the decline of their dementia, students move to attend other care programmes.

Students with dementia attending VUK are diagnosed with a variety of dementias, however, 70% have a diagnosis of Alzheimer's disease. The students are divided into classes according to their interests and cognitive level, with activities run at three levels. Several students attend with frontotemporal dementia and access a class which has been specifically designed to meet their specific needs (see Table 1 for core classes offered).

Insert Table 1: Core classes for students with dementia

The purpose of the education is to maintain cognitive function for as long as possible, support wellbeing, decision making and activities of daily living, as well as providing social activities. The classes are built upon repetition of activities so that students have a structure they recognise and which supports their memory (Ward, 2015).

Exploratory impact of VUK

In 2015, VUK undertook a series of tests to understand the impact of their education on the students with dementia. Tests were conducted with 13 students, all with a diagnosis of Alzheimer's disease. The tests aimed to identify if the students were able to obtain new knowledge and/or learn new skills and identify if these could be maintained over the study period of 12-14 weeks. Students were aged 59>, with an average age 72, and an average MMSE score of 21.

Students undertook seven different tests, over an 18 month period, students only undertook one test at a time, and due to the length of time of the overall test period, not all 13 students undertook all the tests, this was due to: the student's decision to participate; students leaving the school during the test period; and students showing a marked decline in cognition (see Table 2). The student's response times to complete each task were recorded on their first and last attempts (i.e. weeks 1 and 12). The tests were designed to test different skills and were based on educational and neuropsychological theories (Hilling, 1998; Gardner, 1999, Spector et al., 2003).

Insert Table 2: Student tests

The outcome of the tests for visual memory and recognition of an auditory stimuli recorded a 100% improvement, with all the students recognising more items from the first to the last test. Furthermore, the results for the tests for tactile recognition, transference of a learned skill and word recognition reported positive outcomes in terms of improved performance on the task, with 86%, 78% and 75% (respectively) of

students showing an improvement. Fewer students showed an improvement with the tests on short-term and working memory (57% and 43% respectively), and the greatest decline in performance was reported with working memory with 29% of students recalling fewer digits in a series from the first to last test.

Levels of maintenance were also reported, particularly on the tests for short-term and working memory, with 29% and 28% of students recalling the same number of digits from a list across the trial period, providing an inconclusive outcome for the learning based on these particular skills and/or the testing approach.

Discussion

VUK offers a unique opportunity for sustained lifelong learning in an educational environment, where people with dementia attend with fellow students. The school provides a varied educational package for their students, which is flexible to their needs and interests. Furthermore, their focus on cognitive training is central to the delivery of this service for people with dementia. Cognitive stimulation therapy (CST) is a well-respected psychosocial intervention for people with dementia, providing the opportunity to support cognition and quality of life through activities which stimulate memory, concentration and thinking (Spector et al., 2003), an approach used by VUK. The idea behind CST is that cognitive decline could be more pronounced through cognitive inactivity. CST is often run for short periods and while evidence for the benefit of maintaining CST over longer periods of time is inconclusive (D'Amico et al., 2015), the aim is to provide continued activities to help support people with dementia to remain independent for as long as possible. What VUK aim to do, is provide this continuation of activity to support independent living and maintain cognitive function.

The outcome of the tests, conducted by the teaching staff at VUK, indicate that the students are able to continue to develop and learn with the aim of maintaining their cognitive function, decision making and activities of daily living for as long as possible, particularly in areas of skills development, reasoning, and decision making – although the numbers are low and further research is required. The outcomes for short-term and working memory were inconclusive, but could indicate that this type of learning may be variable to individual's learning preferences, but it also indicates the complex nature of the maintenance and enhancement of memory for those with dementia.

The Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) study, which has been exploring the effects of cognitive training for over ten years, have reported similar findings. In the ten year follow-up study, Rebok et al. (2014) reported

that participants showed less decline for self-reported outcomes on the instrumental activities of daily living scores. Furthermore, tests on reasoning and speed of processing showed improvements for the test participants, but no significant improvements in memory were reported compared to a control group. Furthermore, the evidence from ACTIVE indicates that prolonged cognitive training can, over time, support the maintenance of cognitive function, something which VUK advocate through their schooling. The fact that some people maintained their skills should also be considered a positive outcome, and should not be overlooked. In addition, when interviewed, the students at VUK expressed how attending the school supports their existing knowledge and skills. In her report on VUK, Ward (2015) also identifies that the students essentially see the opportunity to go to school as a way of sustaining their mental resilience and wellbeing and maintaining their cognitive abilities for longer.

Conclusion

In all the tests undertaken by VUK there are early indications of improvements in cognitive function, the level of improvement varies by test and for some students, a decline was reported. Given the natural progression of dementia, some decline in performance would be expected over the test period (18 months), however, some students showed an improvement or maintenance of performance, which could indicate the benefits of a sustained educational programme for people with dementia.

The intention now is for a UK team, supported by the staff from VUK, to develop, implement, and evaluate a similar adult education model in the UK, which has been informed by the Danish concept. Given the significance of lifelong learning in Denmark, the aim would be to explore if the model is transferrable within an alternative cultural context. In addition, further evidential work is required to understand the potential impact of the VUK model on supporting retained mental capacity and personal capabilities for people in the early stages of dementia, and if intensive cognitive training delivered by teachers in an educational environment can slow cognitive decline, while enhancing self-confidence and esteem.

References

Caspi, E. (2017). Trust at stake: Is the “dual mission” of the U.S. Alzheimer’s Association out of balance? *Dementia, 0*, 1-22.

D'Amico, F., Rehill, A., Knapp, M., Aguirre, E., Donovan, H., Hoare, Z., ...Orrell, M. (2015). Maintenance cognitive stimulation therapy: An economic evaluation within a randomized controlled trial. *Journal of the American Medical Directors Association, 16*, 63-70.

Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st century*. New York: Basic Books.

Hilling, S. (1998). *Pædagogisk Analyse System*. Jelling: Munkholm.

Laal, M. & Salamati, P. (2011). Lifelong learning; why do we need it? *Procedia – Social and Behavioural Sciences, 31*, 399-403.

Marioni, R.E., Proust-Lima, C., Amieva, A., Brayne, C., Matthews, F., Dartigues J., & Jacqmin-Gadda, H., (2015). Social activity, cognitive decline and dementia risk: a 20-year prospective cohort study. *BMC Public Health, 15*, 1089.

Rebok, G.W., Ball, K., Guey, L.Y., Jones, R.N., Hae-Young, K., King, J.W., ...Willis, S.L. (2014). Ten-year effects of the advanced cognitive training for independent and vital elderly cognitive training trial on cognition and everyday functioning in older adults. *Journal of American Geriatrics Society, 62*, 16–24.

Spector, A., Thorgrimsen, L., Woods, B., Royan, L., Davies, S., Butterworth, M. & Orrell, M. (2003). Efficacy of an evidence-based cognitive stimulation therapy programme for people with dementia. *British Journal of Psychiatry, 183*, 183-254.

Ullán, A.M., Belver, M.H., Badía, M., Moreno, C., Garrido, E., Gómez-Isla, J., ...Tejedor, L. (2011). Contributions of an artistic educational program for older people with early dementia: An exploratory qualitative study. *Dementia, 12*, 425-446.

Ward, A. (2015). *Photography and storytelling: Exploring the experiences of people with early stage dementia*. London: Winston Churchill Memorial Trust.