

LITERATURE REVIEW OF EXISTING EVIDENCE ON RELATIONSHIP BETWEEN RETIREMENT AND DEMENTIA

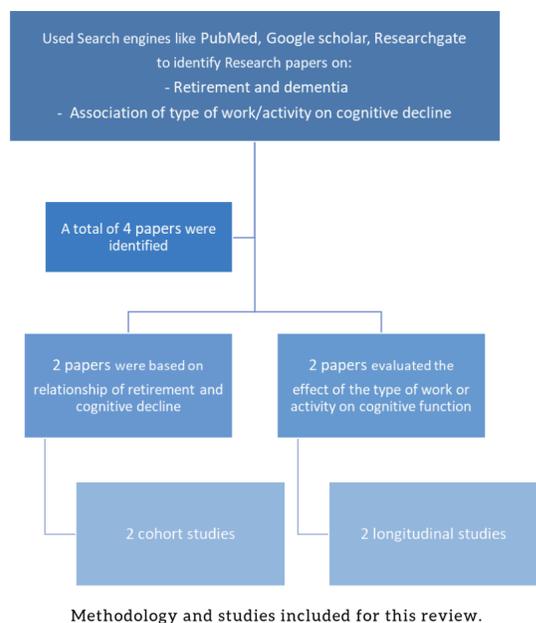
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BACKGROUND

After watching the Netflix series 'Live to 100: Secrets of the Blue Zones,' it was striking to note that in areas of increased longevity, the rates of dementia were astonishingly low. A common theme seen in these geographical places was that older persons never 'retire' and continue to have a work purpose in life, no matter what their age are. This was predominantly seen in the Okinawan people who have an 'Ikigai' which refers to their purpose in life, also described as a passion that gives value and joy to life. In the Netflix show, it was highlighted that, even above the age of 80 years, Okinawans continue to work because of the concept of Ikigai. Interestingly, the latter demonstrated exceptional cognitive functioning for their age compared to other populations. Perhaps, the reason behind the low rates of dementia in this population was related to the fact that the people continued working past their retirement age. To explore this further, existing evidence on the link between retirement and dementia was reviewed. The relationship between the type of occupation in the elderly and its effect on cognitive function was also studied.

METHODOLOGY

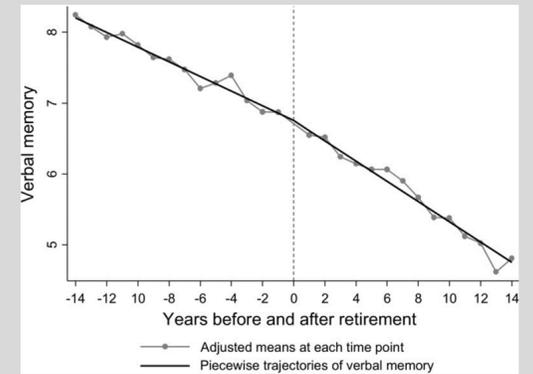
Available research papers on the relationship between retirement and dementia or cognitive decline in the geriatric population were searched using databases like Research Gate, PubMed, and Google Scholar. Two research papers were identified for this review both of which were cohort studies. One of the papers included participants from the Whitehall II cohort study conducted by the University College London. The other research used their study sample from the 'Impact of Cholinergic Treatment Use/Data Sharing Alzheimer' cohort (ICTUS/DSA), which was a European study of 1,380 patients with Alzheimer's Disease. To explore the relationship between the type of work/activity in older persons and its association with cognitive decline, two other research papers were selected from the mentioned databases. One of which studied the association of the complexity of work with the Risk of Dementia. The other paper examined how activity engagement influenced cognitive function among Chinese older adults. The research papers were reviewed and critically appraised.



DISCUSSION

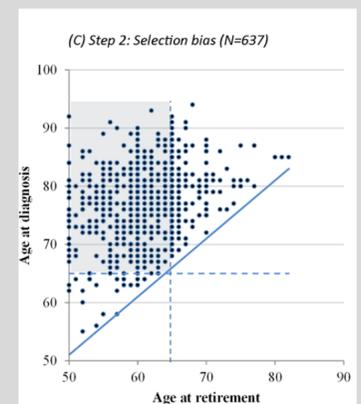
RELATIONSHIP BETWEEN RETIREMENT AND DEMENTIA

The Whitehall II Cohort Study was conducted to investigate the cause of social inequities in health. Xue et al. carried out a cohort study using 3422 civil servants from the Whitehall II Cohort to analyse the 'Effect of retirement on cognitive function.' In this study, several measurements of cognitive functions were taken from 14 years before retirement to 14 years after retirement. The results demonstrated that retirement was related to quicker deterioration in verbal memory with time which the authors related to the 'use it or lose it' hypothesis described by Salthouse (2006). However, this study found minimal effect of retirement on the functioning of other cognitive domains. The authors also considered the potential bias due to the 'healthy worker' effect which suggests that people with good physical health can work for longer compared to those affected by diseases such as vascular diseases. Hence, this might falsify the statement that retirement was directly related to an increased incidence of dementia. The picture on the right demonstrates a steeper curve following retirement that represents a faster decline in verbal memory.



Xue et al. (2018) Trajectories of verbal memory before and after retirement by averaging covariate, European Journal of Epidemiology.

Grotz et al. (2015) studied the link between retirement age and age of onset of Alzheimer's disease. The authors obtained the study sample from the ICTUS/DSA cohort which included 815 patients. The outcome of this research suggested that diagnoses of Alzheimer's dementia were related to younger age of retirement. Also, people retiring late were seen having diagnoses at a much older age. The results are displayed in the scatterplot on the right.



Grotz et al. (2015) Distribution of the age at diagnosis of Alzheimer's disease according to age at retirement (N = 815) PLoS ONE 10(2)

RELATIONSHIP BETWEEN TYPE OF WORK IN OLDER PERSONS AND COGNITIVE FUNCTIONING

STUDY	OUTCOME	LIMITATION
Kröger et al. (2008) conducted a longitudinal study to assess the link between the complexity of work and the risk of Dementia in people aged 65 years and above. The study sample consisted of 8098 people from The Canadian Study of Health and Aging. The researchers examined these persons' lifetime work history. The work complexity was rated according to the 1970 US Census occupational classification and was studied in 3 domains: complexity with data or people or things. For example, how to coordinate data, how to persuade people, and how to feed or off-bear things at work respectively.	The outcome of this study demonstrated that high and intermediate jobs with 'complexity with things and people' were significantly linked to a decline in the risk of having Alzheimer's disease. High complexity occupation related to data was associated with a higher risk of dementia including Alzheimer's disease. The authors speculated that complex work with data might be related to stress and lack of social networks which may indirectly contribute to the negative outcome. Another interesting finding in this study was that the risk of dementia in people who worked for more than 23 years was significantly lower compared to people who worked for 23 years or less.	The main limitation of this study was that it did not include a detailed assessment of work complexity, for example, the concept of complexity related to 'things' mentioned in the paper was poorly defined.
Mao, Xie, and Lu (2023) took data from the China Health and Retirement Longitudinal Study in 2018 to explore how activity engagement was related to cognitive function among Chinese older adults. A group of 9803 participants aged 60 years and above was selected. The authors explored 3 types of activities namely physical, cognitive, and social activities, and how the intensity of these influence cognitive performance in older persons.	It was noted that light to moderate intensity of all three types of activities combined proved to be the most beneficial to the cognitive functioning in the elderly.	The main limitation of this study was that it failed to assess the effect of intensity of each type of activity individually on cognitive function. Also, the different cognitive domains were not evaluated in detail.

CONCLUSIONS

Based on the literature studied, early retirement is associated with an increased risk of dementia. In addition to this, the greater the number of years worked in one's lifetime (more than 23 years as suggested in this review) appears to have a protective effect against Alzheimer's dementia. The high complexity of work when dealing with people is also observed to reduce the risk of

dementia. Perhaps, it is the social interactions that occur at work that are directly related to reduced risk of dementia. Similarly, there might be intermediate variables such as psychological or social factors related to retirement that result in bias. It could also be that a combination of physical, cognitive, and social activities in older age rather than an employment that is protective

against cognitive decline. Research on the impact of late retirement on the different cognitive domains is lacking and this could be explored further in the future. More robust studies need to be carried out to examine the various variables that could influence the relationship between retirement and dementia.

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