

COMMENTARY

Dementia risk and cognitive decline: the impacts of socioeconomic status and modifiable risk factors from a longitudinal Maastricht Aging Study

Commentary on “Socioeconomic position, modifiable dementia risk and cognitive decline: results of 12-year Maastricht Aging Study” by Heger *et al.*

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The number of people living with dementia is increasing globally, with the proportion of people with severe dementia expected to exponentially grow over the coming years and decades (Global Burden of Disease, 2022). Low- and middle-income countries are expected to see an exponential increase in the number of people living with dementia but may not have the same resources to treat or support people with dementia (Guerchet *et al.*, 2020). The heightened need for care will place further pressure on global health and social care services, as well as the unpaid carers who help to support people with dementia, as their dementia progresses (Wittenberg *et al.*, 2020). In most countries, health and social care services are currently struggling to meet the demand for their services, and the expectations and time spent caring by unpaid carers are growing, which tends to lead to people being more likely to only engage with services when they are at crisis point (Black *et al.*, 2019). These factors contribute to greater use of emergency healthcare, particularly accident and emergency departments and admissions to hospitals, as well as increased likelihood of admissions into care facilities, worse physical and mental health deterioration for people with dementia and unpaid carers, and faster progression of dementia symptoms (Tropea *et al.*, 2017). The use of emergency services not only comes at a greater financial cost to the health and social care system but also increases the risk of more negative outcomes (Reeves *et al.*, 2023). The expected and actual diagnosis rates for dementia are not felt equally across communities. There are also social and spatial inequalities in the frequency and quality of health and social care support services, as well as variations in the risk factors for dementia across geographic and socioeconomic groups. Many

groups, including those from more deprived areas, from global majority ethnic backgrounds, and from rural areas, more likely to experience complications in diagnosis and poorer quality care subsequently (Watson *et al.*, 2020).

Evidence demonstrates that a proportion of dementia cases could potentially be mitigated or delayed through changes in a person’s “lifestyle” (Livingston *et al.*, 2020). This includes a healthy diet, reduced alcohol intake, smoking cessation, and increased exercise, as well as systemic factors to help support improved living conditions. However, the potential for people to adhere to a healthy lifestyle is often dependent on numerous factors, including income, social capital, and time availability (Sabatini *et al.*, 2023). Research has demonstrated the importance of protected characteristics in healthcare utilization and health outcomes in dementia (Watson *et al.*, 2020). However, income, wealth, level of deprivation, and such related factors are often inseparable from socioeconomic, demographic, and geographic factors, meaning there can be greater variability in the ability of people to lead the atypical “healthy lifestyle” that can reduce the risk of developing physical and mental health and neurocognitive conditions, including some dementias (Deckers *et al.*, 2019). It is thus important to identify any, and the extent of the association between, modifiable risk factors (e.g., lifestyle factors), cognitive change and dementia progression, and socioeconomic status (SES). There is limited research examining the intersectionality between socioeconomic characteristics, risk factors for dementia, and outcome measures related to the development of dementia and cognitive function. Research on this subject needs to enhance the existing knowledge and help to identify potential

solutions that can be implemented to both promote living healthily and support disadvantaged and underserved groups to improve their potential to adhere to a healthier lifestyle. This is how we can reduce the impact of modifiable risk factors for dementia, in an equitable way.

Heger *et al.* (2023) investigated the longitudinal impact of potentially modifiable risk factors and SES on subsequent dementia risk, as well as the rate of change in cognition. Their study provides an analysis of a cohort of people aged 40 years and older, “without a morbidity known to interfere with cognitive function.” Baseline and subsequent follow-ups at 6 and 12 years of the cohort ($n = 1,223$; Limburg, Netherlands) included electronic health record data; measurements of modifiable risk factors (Lifestyle for BRAin health [LIBRA] index); cognitive outcomes including verbal memory, information processing, and executive functioning (Verbal Learning Test, Letter-Digit Substitution test, and Stroop Color-Word Test); and SES. With the inclusion of additional confounding variables (e.g., age and sex), the authors examined for associations between LIBRA, SES, and cognition, with further analysis looking at whether LIBRA scores or SES impacted the rate of change in cognition over time.

Heger *et al.*'s (2023) findings provide a new avenue through which we can illustrate the social determinants of both the risk factors for dementia and the risk of developing dementia. Their findings indicate that people in lower SES groups had more cognitive decline at the 6-year follow-up, and higher LIBRA scores (“unhealthier” lifestyle) were associated with greater cognitive decline at the 12-year follow-up. However, interestingly, SES was not found to impact the relationship between LIBRA score and cognition, indicating that SES was not a mediating factor between living a “healthier” lifestyle and the risk of dementia or changes in cognition. In essence, lifestyle factors had a consistent impact on cognition and dementia risk but more so among those from lower SES groups who may benefit more greatly from potential interventions.

The findings from Heger *et al.*'s (2023) study demonstrate the potential benefits of interventions to reduce the risk of dementia and cognitive decline by improving facets of a healthy lifestyle – for example: better diet, reduction in alcohol intake, greater exercise, and smoking cessation. Furthermore, there is potentially a greater call for this among people from lower SES groups, who may live a “less healthy” lifestyle than their higher SES counterparts. However, there are numerous factors that have an impact on lifestyle and the ability to be able to make changes to improve health and adhere longer term to a healthier lifestyle. The impact of

high levels of deprivation, including lower household income and lack of services and local amenities, as well as access to childcare or transport, can have a critical effect on a person's ability to live a sustainably healthy lifestyle (The King's Fund, 2024). Supporting a healthy lifestyle can help people to reduce the risk associated with many health conditions, including dementia (Dhana *et al.*, 2020). However, doing so may not be as simple as developing an intervention, as the root causes of healthy lifestyles are at least in part systemic and require change at a much higher level than one intervention can provide (Bambra *et al.*, Heger *et al.*'s (2023) study is novel and important and presents clear and vital findings. However, there are factors of note that need to be addressed from this study. First, the small sample and very focused geographic area limits the ability to generalize the findings to other groups or geographies. Second, the lack of geographic (e.g., location of residence), sociodemographic (e.g., ethnicity), and household confounding variables (e.g., marital status) can restrict the strength of findings (Mooldijk *et al.*, 2021). Global evidence, whether compared at a local, national, or international geographic level, has identified the issues faced by disadvantaged and underserved groups in our communities (Zakarias *et al.*, 2019). Therefore, building on Heger *et al.*'s (2023) research is critical, including investigating the intersectional nature of socioeconomic, demographic, and geographic factors and their association with dementia risk.

The study authors provide important research on the impact of SES and modifiable risk factors on the risk of dementia and cognitive decline over time. Limited research seems to have been conducted in this area, and so further knowledge is needed to address both the impact of SES and modifiable risk factors on dementia risk, as well as the intersectionality nature of the myriad of factors that can impact dementia risk and dementia progression. Research into reducing dementia risk can benefit the overall population to live healthier, independent lives for longer but also to support services and unpaid carers who are currently under great amounts of pressure to care for and support people with dementia (Giebel *et al.*, 2024). The authors recommend delivering interventions to improve health to reduce dementia risk, which is necessary to support long-term, beneficial lifestyle changes. However, this may be easier in theory than in practice. As discussed, a person's ability to lead a healthy life is at least in part determined by a variety of factors related to both demographics and SES. The capacity of interventions to impact on people's lifestyle, particularly longer term could be limited, given the cause of variation in SES is largely systemic (Majoka and

Schimming, 2021). As noted by the authors, this means rigorous interventions need to be developed and sustained to support people to not only lead a healthy lifestyle but also adhere to it long term. Interventions also need to be catered to the population they are working with. The practicalities of delivering support to make lifestyle changes to a wide group of people can be extensive and require careful thought and partnerships with communities. To make sure that everybody has equitable access to a healthy lifestyle, collaborative interventions between all stakeholders are required. This is not a quick fix and needs system-wide change, so disadvantaged and underrepresented groups can benefit (Kerpershoek *et al.*, 2020), and we negate the risk of furthering existing inequalities in both health and the wider determinants of health (Walsh *et al.*, 2023).

In summary, Heger *et al.*'s (2023) study expands on the existing knowledge of the associations between SES, modifiable risk factors, and cognition and the risk of dementia over time. The novel approach and step forward in the knowledgebase provide a great platform for researchers and practitioners to develop research and design interventions to improve healthy lifestyles and reduce the risk of poor health outcomes, particularly among people from deprived and lower SES groups. There is a great need to understand the intersectionality between demographic, socioeconomic, and geographic factors, modifiable risk factors, and the risk of neurocognitive change and dementia risk. In doing so and working with population groups in devising interventions to make access to a healthy lifestyle easier, we can begin to address the impact of the wider determinants of health on the risk of dementia at a time when there are a growing number of people developing dementia.

Conflict of interest

None.

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