

Association between individual-level socioeconomic position and incident dementia using UK Biobank data: a prospective study

Ka Yan Lai*, Chris Webster, Sarika Kumari, John E J Gallacher, Chinmoy Sarkar

Healthy High Density Cities Lab, HKUrbanLab, The University of Hong Kong, Pokfulam, Hong Kong Special Administrative Region, China (K Y Lai MSc, S Kumari MPhil, Prof C Webster DSc, C Sarkar PhD); **Dementias Platform UK, Department of Psychiatry, University of Oxford, Oxford, UK** (Prof J Gallacher PhD)

*Ms Ka Yan Lai is an early career researcher

Correspondence to:

Ms Ka Yan Lai, Healthy High Density Cities Lab, HKUrbanLab, The University of Hong Kong, Pokfulam, Hong Kong Special Administrative Region, China

laikyy@hku.hk

Background

Under-education and living in poverty are known risk factors for dementia. However, single-variable makers of socioeconomic position (SEP) are often correlated and cannot reflect the overall SEP. We examined association between composite SEP and incident dementia using UK-wide data.

Methods

We leveraged data from the UK Biobank, a nation-wide cohort of half-a-million participants recruited across 22 assessment centres during 2006–10. Participants with data on SEP and without dementia at baseline were included. A composite individual-level metric of SEP (low, medium, or high) was developed through latent class analysis using Stata's gsem command and identified through item-response probabilities based on participants' single socioeconomic factors (ie, education, employment, and household income). Cox proportional hazard models were developed to examine the association between composite SEP and incident dementia after adjusting for age, ethnicity, lifestyle factors (eg, living alone), social interaction (eg, frequency of visits from acquaintances), urbanicity, clinical variables (eg, central obesity), and stratified by sex. As sensitivity test, we repeated our analysis with single socioeconomic factors. Electronic informed consent was obtained from participants at the UK Biobank assessment centres before participations and UK Biobank acquired ethical approval from the National Health Service National Research Ethics Service.

Findings

We included 340 366 adult participants (178195 [52.4%] were women and 326753 [96.0%] White) aged 38–73 with 3541 incident dementia cases over a mean follow-up period of 12.0 years (SD 1.7). Relative to participants in the highest SEP, those in the medium (HR 1.53 [95% CI 1.33–1.77]; $p < 0.0001$) and low (2.38 [2.05–2.77]; $p < 0.0001$) SEP were associated with higher risks of incident dementia. Sensitivity analyses consistently found higher risks of incident dementia in participants of low educational attainment (HR 1.14 [95% CI 1.03–1.27]; $p = 0.0107$), low household income (HR 2.33 [95% CI 2.03–2.68]; $p < 0.0001$) and being unemployed (HR 1.27 [95% CI 1.11–1.47]; $p = 0.0008$), relative to those of high education, high household income, and being employed, respectively. Limitations of the study include a response of only 503 325 (5.5%) of 9.2 million participants registered with the National Health Service and residual confounding.

Interpretation

This study presented a parsimonious approach to construct a composite metric of SEP by employing three key indicators. We found that participants of low SEP were associated with an elevated risk of incident dementia. Socially deprived populations maybe more likely to be exposed to unfavourable psychosocial and environmental stressors that escalate risk of dementia. Our study further strengthens the evidence base for designing policy interventions for at-risk subgroups of lower SEP strata to reduce burdens of dementia.

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Contributors

All authors conceived the study. CS and KYL designed the study. KYL performed statistical analyses and drafted the abstract. CS, KYL and SK contributed to validation. CS supervised the study. All the authors critically reviewed for intellectual content, contributing to interpretations.

Declaration of interests

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