

Dementia in Southeast Asia: influence of onset-type, education, and cerebrovascular disease

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INTRODUCTION

The prevalence of dementia types and their clinico-demographic profiles, including possible aetiological risk factors, in Southeast Asia remain poorly described in the literature. This study aims to describe the demographic and longitudinal profiles of dementia in Southeast Asia, and examines the association of onset-type, education, and cerebrovascular disease (CVD) on disease progression. We hypothesized that higher levels of lifespan education would be protective against cognitive decline and higher CVD load would result in a more rapid cognitive decline.

METHODS

Participants and study design

Data was extracted from a longitudinal database of patients with cognitive impairment and patients attending the dementia clinic of a tertiary hospital in Singapore between 2010 and 2019. Only patients diagnosed with dementia based on the DSM IV and 5 criteria were included in this study. Patients with dementia included dementia of the Alzheimer's type (DAT), frontotemporal dementia (FTD), vascular dementia (VaD), Parkinsonism spectrum dementia, rapidly progressing dementia (RPD), and autoimmune dementia. These patients were only included if they had at least one follow-up visit following the initial visit.

Cognitive and behavioral measurements

Patients underwent evaluation for global cognition with the local versions of the Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA). Patients were also screening for depression with the geriatric depression scale (GDS).

Measurement of cerebrovascular disease burden

Patients underwent neuroimaging using either 1.5T MRI scanner (Philips Ingenia) or 3T Siemens Prisma Fit (Siemens, Erlangen, Germany) or coronal fine cut CT scans. T1-weighted and fluid-attenuated inversion recovery were used for visual rating of scans based on the modified Fazekas scale for WMH severity. All visual ratings were performed by 2 independent raters, and any significant discordance in scores were resolved by consensus.

RESULTS

The three most common diagnoses were Dementia of the Alzheimer's type (DAT) (59.8%), vascular dementia (14.9%) and frontotemporal dementia (11.1%). Young-onset dementia (YOD) patients accounted for 28.5% of all dementia patients.

DISCUSSION

Vascular risk factors such as diabetes and hypertension cause vascular injury to the brain and amyloid pathologies, resulting in CVD. This results in

1. An increase in patients with YOD due to increasing burden of these risk factors in the young
2. Faster decline in global cognition in late-onset dementia (LOD) patients with a moderate-to-severe burden of CVD, resulting in earlier onset of 3-point decline in MMSE

CVD may cause atrophy of grey matter regions important for episodic memory and executive function. In older patients, this results in

1. An increased frequency of dementia
2. An increased neural plaque density
3. Accelerated neurodegeneration

thereby causing a faster decline in cognition in LOD patients.

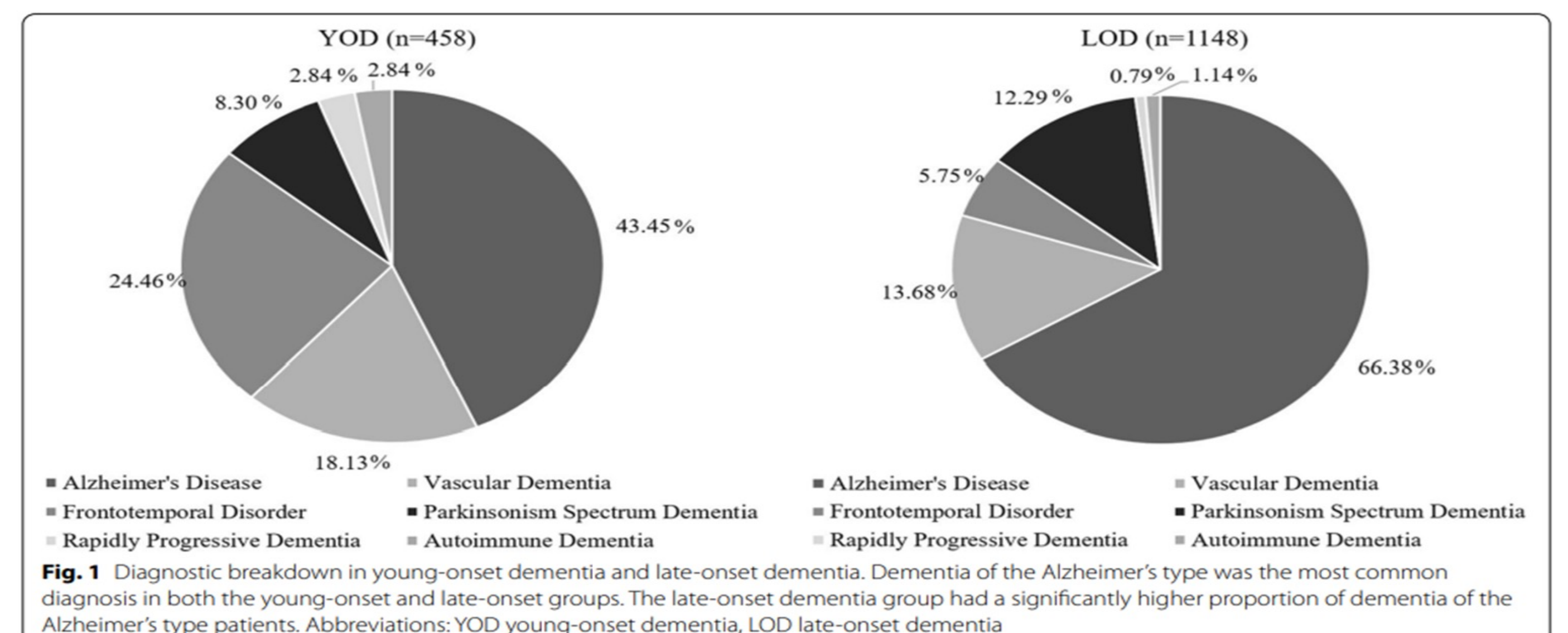
In YOD patients, longitudinal cognitive decline was proportional to lifespan education, which could be due earlier exhaustion of cognitive reserve. Additionally, YOD being more aggressive, causes greater neuronal loss and cerebral hypometabolism.

Limitations

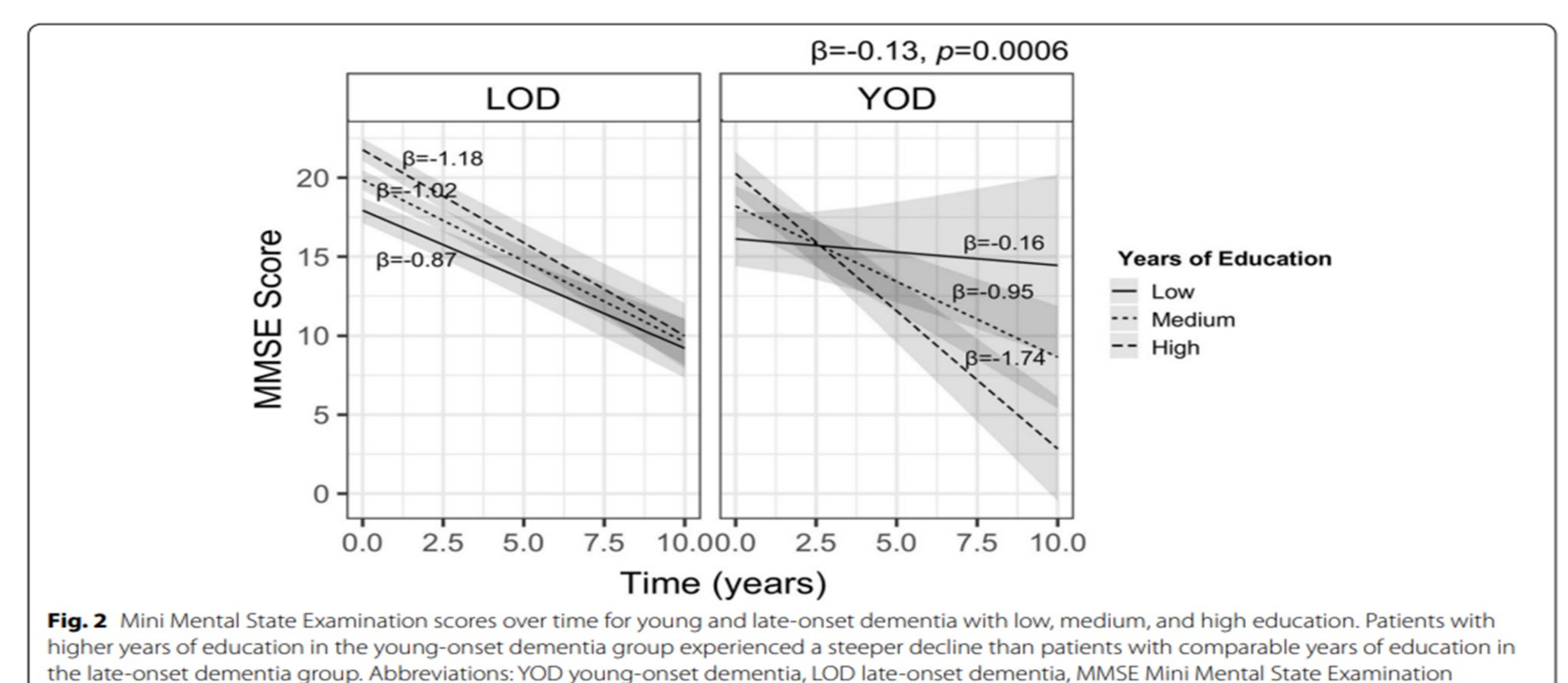
Data obtained was from one memory clinic, and hence may not apply to the whole population. However, this allows comparison with other memory clinics in SEA. Information on the longitudinal progression of CVD and its impact on cognition was not included as well.

Conclusion

There is a high frequency of YOD, specifically DAT and VaD, where YOD patients with greater years of lifespan education experience a steeper decline in cognition. LOD patients with moderate-to-severe CVD also experience a greater decline in cognition.



It was noted that patients with higher lifespan education had a steeper decline in global cognition ($p < 0.001$), particularly in YOD ($p = 0.0006$).



For older patients, those with a moderate-to-severe burden of CVD demonstrated a trend for a faster decline in global cognition compared to those with a mild burden.

