

Abstract

Purpose : Visual impairment has been recognized as one of the modifiable risk factors for cognitive decline in older adults, yet population-based evidence remains limited. This study examined the association between visual acuity (VA) and cognitive performance in a nationally representative cohort of Irish adults aged 50 years or older.

Methods : This cross-sectional study analysed data from Wave 3 of TILDA. VA at distance was measured using ETDRS LogMAR vision chart. Cognitive performance was assessed using the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA). Visual impairment was defined as the best corrected visual acuity (BCVA) of less than 0.3 logMAR (6/12 Snellen equivalent) in the better seeing eye. Cognitive impairment was defined as scores less than 24 for MMSE and less than 26 for MoCA. Linear and logistic regression models were fitted with sequential adjustment for demographic, socioeconomic, lifestyle and clinical covariates. Health assessment weights were applied to all analyses.

Results : The final sample included 3598 adults with the mean [SD] age of 65.4 [7.7] years. Fifty four percent were women. In fully adjusted linear models, BCVA was significantly associated with cognitive performance wherein individuals with worse BCVA performed poorly in both MMSE ($\beta = -1.03$; 95% CI, -1.65 to -0.42) and MoCA ($\beta = -2.97$; 95% CI, -4.04 to -1.92). Similarly, in fully adjusted logistic models, individuals with visual impairment were at a significantly higher odds of having cognitive impairment compared to individuals with no visual impairment (OR, 5.13; 95% CI, 1.99–13.19 for MMSE and OR, 1.75; 95% CI, 1.33–2.31 for MoCA). Furthermore, individuals with bilateral visual impairment were at a significantly higher odds of having cognitive impairment as compared to individuals with no visual impairment (OR, 4.00, 95% CI 1.40 – 11.46 for MMSE and OR, 1.73, 95% CI 1.30 – 2.30 for MoCA).

Conclusions : The findings suggest that visual impairment is strongly and independently associated with poor cognitive performance. Consistent associations between VA and cognitive measures underscore the importance of integrating vision screening into cognitive health strategies. Addressing visual impairment in adults may offer a meaningful opportunity to support healthy cognitive ageing.

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