Association between severe hypoglycaemia and risk of dementia in patients with type 2 diabetes mellitus: A systematic review and meta-analysis

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Abstract

The aim of this systematic review was to analyse whether there is an association between severe hypoglycaemia and the incidence of dementia in patients with type 2 diabetes mellitus. We systematically searched the MEDLINE, Scopus, and Cochrane databases from their inception until September 2022 for observational studies on the association between hypoglycaemia and the risk of dementia. The DerSimonian and Laird method was used to compute a pooled estimate of the risk for such association. Risk ratio (RR) and its respective 95% confidence interval (95% CI). Two analyses were performed to estimate the risk of dementia: (i) any hypoglycaemia versus no hypoglycaemia and (ii) a dose–response analysis for one, two, or more than three hypoglycemic events versus no hypoglycaemia. PROSPERO registration number CRD42020219200. Seven studies were included. The pooled RR for the association of severe hypoglycaemia and risk of dementia was 1.47 (95% CI: 1.24–1.74). When the dose–response trend was analysed, the pooled RR for the risk of dementia was increased according to the hypoglycaemia events as follows: 1.29 (95% CI: 1.15–1.44) for one hypoglycemic event; 1.68 (95% CI: 1.38–2.04) for two hypoglycemic events; and 1.99 (95% CI: 1.48–2.68) for three or more hypoglycemic events. Our study demonstrates a 54% higher risk of dementia among people who suffer a hypoglycaemia event compared to nonhypoglycaemia. Considering our results and the prevalence of people suffering from diabetes mellitus, health education for both newly diagnosed and already diagnosed people could be a useful tool for glycaemic control, thus avoiding hypoglycaemic events. © 2023 John Wiley & Sons Ltd.

Author keywords

cognitive impairment; dementia; diabetes mellitus; dose–response effect; hypoglycemia