

INPLASY

Risk factors for cognitive impairment in elderly patients with type 2 diabetes: a protocol for systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 October 2024 and was last updated on 6 October 2024.

INTRODUCTION

Review question / Objective What is the risk factor for elderly diabetic patients with cognitive impairment?

Condition being studied Speech problems, memory loss, declines in executive function, and cognitive dysfunction are all considered symptoms of cognitive impairment in type 2 diabetes mellitus (DCI). Diabetes also speeds up the pathological changes in the brain's cognitive regions, leading to the deterioration of cognitive function and increasing the risk of dementia. Studies reveal similarities in the pathophysiological mechanisms underlying diabetes and cognitive impairment.

Patients with diabetes have a risk of cognitive impairment that is more than double that of the general population, and those with type 2 diabetes have a likelihood of cognitive impairment that ranges from 30.7% to 70%. Patients with type 2 diabetes have an incidence rate of dementia of 83/10000 person-years among those 60-64 years of age, and an incidence rate of more than

1000/10000 person-years among those 85 years of age and beyond. The long-term nature of diabetes, inadequate blood glucose control, insulin resistance, etc., may all contribute to the cognit.

METHODS

Participant or population Elder patients (≥ 60 years) with type 2 diabetes.

Intervention To explore the risk factors for cognitive impairment in elderly patients with type 2 diabetes mellitus.

Comparator The comparator will be a non-exposed control group.

Study designs to be included Case-control studies and cohort studies.

Eligibility criteria The eligibility criteria established based on the PECOS (Population, Exposure, Comparator, Outcome, Study designs, Setting) statement.

Information sources We will search the following databases: PubMed, Embase, the Cochrane Library, Web of Science, CNKI, WANFANG, SinoMed.

Main outcome(s) Univariate and multivariate risk factors for DCI in older people with type 2 diabetes. Contains all physiological (general/medical), clinical, social, and demographic risk factors for DCI in older people with type 2 diabetes mellitus.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale (NOS) is a widely utilized quality assessment instrument for case-control and cohort studies. It assesses cohort studies and case-control studies with three modules comprising a total of eight elements. The study encompassed the selection of the population, comparability, exposure, and outcomes. NOS employed the semi-quantization principle of the star system to assess literary quality. The maximum score is 9, and articles scoring below 6 are eliminated. If two researchers have a disagreement over the quality assessment of the article, please consult a third researcher with equivalent qualifications to make a determination. The GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) methodology will be employed to assess the quality of evidence for each exposure and outcome of interest.

Strategy of data synthesis The RevMan 5.4 software was employed for statistical analysis, whereas Stata 17.0 was utilized for assessing sensitivity and publication bias. For continuous outcome data, the standard mean difference (SMD) or weighted mean difference (WMD) accompanied by a 95% confidence interval (CI) will be employed. For dichotomous data, the analysis will employ the risk ratio (RR) or risk difference (RD) accompanied by a 95% confidence interval (CI).

Subgroup analysis Subgroup analysis will be conducted when adequate data is accessible. We will conduct subgroup analysis, related to gender, region, categories of chronic problems, etc.

Sensitivity analysis If I250%, the heterogeneity across the included studies will be regarded as excessive, necessitating the use of a random effects model. If heterogeneity exceeds 75%, a meta-analysis will not be performed. We shall employ descriptive analysis. Sensitivity analysis will be performed by evaluating the consistency of results derived from two effect models.

Country(ies) involved China.

Keywords cognitive impairment; type 2 diabetes; elder; systematic review.

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