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### ADMINISTRATIVE INFORMATION

**Support** - No financial support.

**Review Stage at time of this submission** - The review has not yet started.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202620035

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 February 2026 and was last updated on 10 February 2026.

### INTRODUCTION

**Review question / Objective** We aim to consolidate the existing literature on the association between diabetic retinopathy and dementia to provide a comprehensive understanding of their relationship.

**Condition being studied** To investigate the association between diabetic retinopathy and dementia.

### METHODS

**Participant or population** The systematic review and meta-analysis included studies with a combined total of 2887409 participants.

**Intervention** Not applicable.

**Comparator** Not applicable.

**Study designs to be included** We followed the MOOSE and PRISMA guidelines.

**Eligibility criteria** Articles were included in this systematic review and meta-analysis if they met the following criteria: (1) observational studies (e.g., cross-sectional, cohort, and case-control); (2) involved adult patients with diabetic retinopathy (DR); (3) reported the risk of dementia among patients with DR; (4) included at least one primary outcome related to any type of dementia (e.g., general dementia, Alzheimer's disease); and (5) reported study effects in terms of odds ratio (OR) or hazard ratio (HR). The exclusion criteria were: (1) studies without a comparable group; (2) articles not published in English; and (3) reviews, commentaries, letters, editorials, case reports, and non-peer-reviewed sources.

**Information sources** Initially, 1427 records were identified through electronic database searches, with 832 records remaining after removing duplicates. After screening titles and abstracts, 13

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articles were selected for full-text review. However, 4 articles were excluded based on the exclusion criteria, leaving 9 studies included in the meta-analysis.

**Main outcome(s)** This systematic review and meta-analysis identified an association between diabetic retinopathy and an increased risk of dementia.

**Quality assessment / Risk of bias analysis** Quality of studies was independently evaluated by the same two authors using the Newcastle-Ottawa Scale. Publication bias was assessed both visually with a funnel plot and statistically using the Egger test of intercept.

**Strategy of data synthesis** Statistical analysis was conducted with STATA basic edition.

**Subgroup analysis** Subgroup analysis was conducted based on dementia types, region, follow-up period, and methodological quality.

**Sensitivity analysis** Given the substantial heterogeneity in the findings, a sensitivity analysis was carried out. This involved systematically excluding each study one at a time to assess the impact of individual studies on the overall risk of dementia.

**Country(ies) involved** Taiwan and United States.

**Keywords** Diabetic retinopathy; Dementia; Alzheimer's disease; Diabetes mellitus.

#### **Contributions of each author**

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