

# INPLASY

## Prevalence of major depressive disorder among patients with strokes: a systematic review and meta-analysis

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### ADMINISTRATIVE INFORMATION

**Support** - University of Macau.

**Review Stage at time of this submission** - Data analysis.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202650118

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 May 2026 and was last updated on 21 May 2026.

### INTRODUCTION

**Review question / Objective** This systematic review and meta-analysis aims to estimate the prevalence of major depressive disorder among patients with stroke. The review question is: What is the pooled prevalence of major depressive disorder in patients diagnosed with stroke?

Using the PICOS framework:

(P)The participants will be patients diagnosed with stroke, including ischemic stroke or hemorrhagic stroke. (I)&(C)No intervention or comparator will be applied, as this is a prevalence review.

(O)The primary outcome will be the prevalence of major depressive disorder diagnosed according to standardized diagnostic criteria, such as the Diagnostic and Statistical Manual of Mental Disorders or the International Classification of Diseases system.

(S)Eligible study designs will include observational studies, such as cross-sectional studies and cohort studies, if extractable prevalence data for

major depressive disorder among stroke patients are available.

**Rationale** Stroke is a major cause of disability and mortality, and major depressive disorder (MDD) is an important psychological complication among stroke patients. MDD may negatively affect rehabilitation, quality of life, treatment adherence, and prognosis. However, reported prevalence estimates of MDD among stroke patients vary across studies due to differences in populations, assessment timing, study settings, and diagnostic methods.

Most previous reviews focused on post-stroke depression broadly, including studies based on symptom scales. Therefore, this systematic review and meta-analysis aims to estimate the pooled prevalence of clinically diagnosed MDD among patients with stroke using standardized diagnostic criteria.

**Condition being studied** The condition being studied is major depressive disorder (MDD) among

patients with stroke. Stroke includes ischemic and hemorrhagic stroke and may lead to substantial physical, cognitive, and psychological consequences. MDD is a clinically diagnosed depressive disorder that may impair rehabilitation, quality of life, treatment adherence, and prognosis after stroke. This review will focus on the prevalence of MDD diagnosed according to standardized diagnostic criteria in stroke populations.

## METHODS

**Search strategy** A systematic literature search will be conducted in PubMed, Embase, Web of Science, PsycINFO, CNKI, and Wanfang. The search strategy will combine terms related to stroke, major depressive disorder, and prevalence. ("Stroke" OR "Cerebrovascular Accident" OR "Cerebrovascular Accidents" OR "CVA (Cerebrovascular Accident)" OR "Cerebrovascular Apoplexy" OR "Apoplexy, Cerebrovascular" OR "Vascular Accident, Brain" OR "Brain Vascular Accident" OR "Brain Vascular Accidents" OR "Cerebrovascular Stroke" OR "Cerebrovascular Strokes" OR "Stroke, Cerebrovascular" OR "Strokes, Cerebrovascular" OR "Apoplexy" OR "Cerebral Stroke" OR "Cerebral Strokes" OR "Stroke, Cerebral" OR "Strokes, Cerebral" OR "Stroke, Acute" OR "Acute Stroke" OR "Acute Strokes" OR "Strokes, Acute" OR "Cerebrovascular Accident, Acute" OR "Acute Cerebrovascular Accident" OR "Acute Cerebrovascular Accidents" OR "Cerebrovascular Accidents, Acute") AND ("major depress\*" OR "unipolar depress\*" OR "Depressive Disorder, Major") AND ("epidemiology" OR "prevalence").

**Participant or population** Patients diagnosed with stroke, including ischemic stroke or hemorrhagic stroke, will be included. Participants may be from hospital-based, community-based, or rehabilitation settings.

**Intervention** Not applicable. This review is a prevalence systematic review and meta-analysis, and no intervention will be evaluated.

**Comparator** Not applicable. No comparator group is required for this prevalence review.

**Study designs to be included** Observational studies, including cross-sectional studies and cohort studies, will be included if they report extractable prevalence data for major depressive disorder among patients with stroke.

**Eligibility criteria** Additional eligibility criteria were as follows: studies were limited to those published in English or Chinese. Studies with duplicate or overlapping samples were excluded. When multiple articles were based on data from the same dataset, the article with the most complete data was included in the meta-analysis. Studies that did not report a standardized diagnosis of stroke or did not diagnose MDD according to standardized diagnostic criteria were excluded. Studies without sufficient data to calculate the prevalence of MDD among stroke patients were also excluded. Reviews, meta-analyses, case reports, conference abstracts, editorials, letters, comments, protocols, and animal studies were excluded. In addition, the reference lists of relevant articles and reviews were manually screened to identify any additional eligible studies.

**Information sources** PubMed, Web of Science, PsycINFO, EMBASE, CNKI and WanFang electronic databases.

**Main outcome(s)** The prevalence of major depressive disorder diagnosed according to standardized diagnostic criteria, such as the Diagnostic and Statistical Manual of Mental Disorders or the International Classification of Diseases system.

**Additional outcome(s)** NA.

**Data management** All retrieved records will be imported into EndNote for reference management and duplicate removal. After duplicates are removed, titles and abstracts will be screened independently by three reviewers according to the predefined eligibility criteria. Potentially eligible articles will then be assessed by full-text review. Disagreements during study selection will be resolved through discussion, and a senior reviewer will be consulted if necessary.

Data from included studies will be extracted using a standardized Microsoft Excel form. Extracted information will include study title, first author, publication year, country, study setting, participants' origin, sample size, stroke type, MDD assessment time, diagnostic method, number of MDD cases, MDD prevalence, mean age, male proportion, and other relevant study characteristics. All extracted data will be checked for consistency before statistical analysis.

**Quality assessment / Risk of bias analysis** Joanna Briggs Institute critical appraisal checklist for prevalence studies with 9 items.

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**Strategy of data synthesis** All records retrieved from electronic databases will be imported into EndNote for reference management and duplicate removal. After deduplication, titles and abstracts will be screened independently by three reviewers according to the predefined eligibility criteria. Potentially eligible studies then be assessed through full-text review. Any disagreement during study selection will be resolved through discussion with a senior reviewer.

**Subgroup analysis** Subgroup analysis were performed for diagnostic method, assessment time, country income level, stroke type, and aphasia exclusion status.

To avoid potential overlap with unspecified clinician DSM/ICD diagnoses and unstable estimates from less commonly used diagnostic methods, the diagnostic-method subgroup analysis was limited to studies explicitly reporting SCID, CIDI, or MINI. Assessment time was categorized as  $\leq 3$  months,  $>3$  to 6 months, and  $>6$  months after stroke, corresponding to the early sub-acute phase, the late sub-acute phase and chronic phase. Country income level was defined according to the classification of World Bank Country and Lending Groups. The classification of lower-middle and upper-middle income were combined as middle-income countries due to the limited number of studies in the separate income subgroups. Stroke type was categorized as ischemic only or mixed stroke according to the stroke populations reported in the included studies. Subgroup analyses were performed when at least two studies were available in each subgroup, and meta-regression analyses were conducted when at least 10 studies were available for a given covariate.

**Sensitivity analysis** A leave-one-out sensitivity analysis was conducted by sequentially removing one study at a time and recalculating the pooled prevalence using the same random-effects model.

**Language restriction** English & Chinese.

**Country(ies) involved** Macao SAR, China.

**Keywords** Prevalence, Major depressive disorder, Stroke patients, Meta-analysis.

**Dissemination plans** The findings of this systematic review and meta-analysis will be submitted for publication in a peer-reviewed academic journal. The results may also be presented at academic conferences or research meetings. If appropriate, the findings will be shared with researchers and clinicians interested in stroke,

post-stroke mental health, and major depressive disorder.

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

Author 1 - Yanzhang Li - Author 1 contributed to the conception and design of the review, developed the search strategy, conducted literature screening, data extraction, quality assessment, statistical analysis, and drafted the manuscript.

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