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All-cause and cause-specific standardized mortality ratios following discharge from psychiatric inpatient care: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - Unfunded.

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

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 1 February 2026 and was last updated on 1 February 2026.

INTRODUCTION

Review question / Objective To systematically review and meta-analyse standardized mortality ratios (SMRs) for all-cause and cause-specific mortality among people discharged from psychiatric inpatient facilities, compared with the general population.

Rationale This review updates a previously published systematic review and meta-analysis of mortality following discharge from psychiatric inpatient care (Swaraj et al., *Acta Psychiatrica Scandinavica*, 2019). The earlier review synthesised cause-specific mortality rates using person-years at risk. Since its publication, additional large cohort studies have become available, and standardized mortality ratios (SMRs) are now more commonly reported. The current review extends the search to 2026 and adopts a revised analytic approach, focusing on meta-analysis of all-cause and cause-specific SMRs using log-transformed estimates and random-

effects models. This update improves comparability across studies and provides an updated summary of excess mortality following psychiatric discharge.

Condition being studied Excess mortality following discharge from psychiatric inpatient care.

METHODS

Search strategy The following electronic databases will be searched:

MEDLINE

Embase

PsycINFO

Reference lists of included studies and relevant reviews will be hand-searched to identify additional eligible studies.

Search strategy

The search strategy will update a previously published systematic review and meta-analysis, using the same core search terms and databases, with the end date extended to 2026.

Search terms will combine concepts related to:
 Psychiatric inpatient admission or discharge
 Mortality or death
 Suicide and other causes of death
 An example MEDLINE search strategy will include combinations of terms such as:
 “suicid*”
 “mortality” OR “death”
 “psychiatr*” OR “mental”
 “hospital*”, “inpatient*”, “discharg*”, “admission”
 No language restrictions will be applied
 These searches will be supplemented by hand searching of relevant reviews.

Participant or population People of any age discharged from psychiatric inpatient facilities, including general adult, forensic, long-stay, and adolescent psychiatric services.

Intervention None, this is a meta-analysis of observational data.

Comparator The general population, as defined by the standardization procedures used in each included study (e.g. national or regional population mortality rates adjusted for age, sex, and calendar period).

Study designs to be included Longitudinal cohort studies (prospective or retrospective). Registry-based or record-linkage studies.

Eligibility criteria

Inclusion criteria

Studies reporting SMRs, or sufficient data to calculate SMRs (observed and expected deaths).

Mortality outcomes reported following discharge from psychiatric inpatient care.

Use of population mortality rates as the reference standard.

Follow-up of at least one month after discharge.

Exclusion criteria

Studies restricted to psychogeriatric cohorts only.

Studies in which cohorts are defined primarily by specific medical conditions (e.g. neurodegenerative disease, eating disorders).

Cross-sectional studies, case series, or studies without a general population comparator.

Duplicate reports of the same cohort (most complete or recent report retained).

Information sources

The following electronic databases will be searched:

MEDLINE

Embase

PsycINFO

Reference lists of included studies and relevant reviews will be hand-searched to identify additional eligible studies.

Main outcome(s) SMR relating to total, total natural, total unnatural, and the cause-specific mortality according to CODeM, including vascular, gastrointestinal, respiratory, neoplastic, infections, metabolic, renal, mental & behavioural, other, unknown/poorly defined, suicide, homicide, and accident.

Additional outcome(s) None.

Data management Two reviewers will independently extract data using a standardized extraction form. Discrepancies will be resolved by consensus.

Extracted data will include:

Study characteristics (country, years, setting)

Population characteristics (age, sex, diagnosis)

Follow-up duration

Observed deaths (O)

Expected deaths (E)

Reported SMRs and confidence intervals

Cause of death categories

Standardization methods used

Quality assessment / Risk of bias analysis Risk of bias will be assessed using a modified quality appraisal tool for observational cohort studies, including assessment of:

Cohort definition

Ascertainment of mortality outcomes

Adequacy of follow-up

Appropriateness of population standardization

Control for age, sex, and calendar period.

Strategy of data synthesis

Effect measure

The natural logarithm of the standardized mortality ratio ($\ln[\text{SMR}]$).

Statistical analysis

Meta-analysis will be conducted using a random-effects model with inverse-variance weighting.

Between-study heterogeneity will be assessed using Cochran's Q and the I^2 statistic.

When observed deaths are available, the standard error of $\ln(\text{SMR})$ will be approximated as $\sqrt{1/O}$.

When only confidence intervals are reported, standard errors will be derived from the log-transformed confidence limits.

Random effects metaregression will examine the effects of publication year, duration of follow-up.

Subgroup analysis Planned subgroup and meta-regression analyses will explore heterogeneity by: Sex

Age group (if possible)
Diagnostic category
Follow-up duration
First admission vs any admission
Study period
Standardization method
Sensitivity analyses will examine:
Exclusion of studies with a high risk of bias.

Sensitivity analysis

Sensitivity analyses will examine:
Exclusion of studies with a high risk of bias
Small-study effects will be examined using funnel plots and Egger's regression test when sufficient studies are available.

Language restriction English Language.

Country(ies) involved Australia.

Other relevant information This review updates a previously published systematic review and meta-analysis of mortality following discharge from psychiatric inpatient care (Swaraj et al., *Acta Psychiatrica Scandinavica*, 2019). The earlier review synthesised cause-specific mortality rates using person-years at risk. Since its publication, additional large cohort studies have become available, and standardized mortality ratios (SMRs) are now more commonly reported. The current review extends the search to 2026 and adopts a revised analytic approach, focusing on meta-analysis of all-cause and cause-specific SMRs using log-transformed estimates and random-effects models. This update improves comparability across studies and provides an updated summary of excess mortality following psychiatric discharge.

Keywords Mortality, post-discharge, mental health, SMR.

Dissemination plans Findings will be submitted for publication in a peer-reviewed psychiatric journal and presented at relevant academic conferences.

Contributions of each author

Author 1 - Matthew Large - Conceive and design; Searches ; Selection of studies ; Data extraction; Analysis; Draft manuscript.

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