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Meta-analysis of suicide in general hospitals

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data analysis.

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 July 2025 and was last updated on 1 July 2025.

INTRODUCTION

Review question / Objective To quantify and estimate trends in the prevalence of suicides in general medical and surgical settings. The hypothesis was that improved design of hospitals and the advent of consultation-liaison psychiatry has improved hospital safety in this regard.

Rationale Estimates of the rates of suicide associated with inpatient psychiatric care have recently derived by meta-analysis (Walsh, Sara et al. 2015) (Chung, Hadzi-Pavlovic et al. 2019), but are not established in medical and surgical settings. A 2008 review of suicides in medical settings by Ballard and associates concluded the field was limited by the small number of studies and inconsistent reporting of events (Ballard, Pao et al. 2008). Since 2008 there have been several new primary studies describing suicidality in general hospitals (Ang 2018) (Rucco, Gentile et al. 2023) (Shekunov, Geske et al. 2013) (Sweeting, Finlayson et al. 2023) (Tseng, Cheng et al. 2011), opening the opportunity for a meta-analysis.

Condition being studied General Hospital Suicides, defined as intentional acts with a fatal outcome committed on medical or surgical inpatient wards.

METHODS

Search strategy English Language publications indexed in EMBASE, APA [PsycINFO] and Medline between 1946 and 15 June 2025, were identified with the terms ((suicide* or self-harm or self harm) and Inpatient or In-patient) and (Somatic or medical or surgical or general hospital).af or (Suicidal ideation AND General Hospital and Suicide and General Hospital).mp.).

Titles and abstracts were reviewed by the primary author based on likelihood of meeting inclusion criteria. Electronic searches were supplemented by searched of the reference lists of reviews and included papers. JS and SS independently examined the full texts for inclusion and exclusion,

with differences in decisions resolved by joint examination and consensus.

Participant or population Population studied was all patients admitted to hospital in medical and surgical wards in a general hospital setting.

Intervention N/A.

Comparator N/A.

Study designs to be included Cohort, case-control, and cross-sectional studies were included.

Eligibility criteria Studies were included if they reported a series of suicides in medical and surgical inpatient settings. Excluded data included studies of suicide attempts, non-intentional deaths, and deaths resulting from suicide attempts in the community. We excluded studies reporting suicides in psychiatric settings and toxicology services, deaths in hospital as a result of suicide attempts prior to admission, and where the suicides in general hospital could not be separated.

Information sources Electronic searches were supplemented by searched of the reference lists of reviews and included papers.

Main outcome(s) Primary outcomes included obtaining a meta-analytic syntheses of the probability of suicide occuring per admission, and the rate of suicide per 100,000 bed-years, in medical and surgical inpatient hospital settings.

Additional outcome(s) Secondary analysis included meta-analytic synthesis of an estimate of the proportion of suicides in the general hospital setting performed by method, including jumping, hanging, use of sharp objects, and poisoning.

Quality assessment / Risk of bias analysis A four-item strength of reporting scale was derived from items of the Newcastle-Ottawa Strength of Reporting Scale (Wells GA 2000) was used to assessed each primary study. The scale included one item appraising representativeness of the patient sample (recruitment of admissions from defined geographic catchment area), two items appraising measurement of exposure (utilisation of rating scales and/or ICD/DSM codes for medical diagnoses, and comprehensiveness of reporting), and one item appraising ascertainment of outcome (utilisation of external mortality databases when considering death by suicide).

Strategy of data synthesis A random effects model was chosen for all analyses because of a priori assumptions of significant differences in the settings and patient populations examined in primary studies conducted in numerous countries over the decades.
The probability of an event per admission was converted to the number of suicides per 1,000,000 admissions and the rate of suicides per patient year was converted to the rate of suicide per 100,000 patient years after the analysis.
Secular trends in the probability of a suicide per admission, the event rate per patient year and the proportion of deaths according to jumping and hanging were examined using a mixed-effects regression (method of moments) model and the mid-year of data ascertainment as the moderator.
For each analysis, measures of heterogeneity were estimated with I2 statistics, and 95% confidence intervals.
Publication bias was assessed for each analysis by inspection of funnel plots and Egger's regression intercepts obtained. If Egger's regression intercept indicated a significant level of publication bias ($P<0.05$), then Duval and Tweedie's trim and fill method was used to estimate the effect of publication bias on effect size.

Subgroup analysis Subgroup analysis not performed.

Sensitivity analysis Not performed.

Language restriction English language papers were considered.

Country(ies) involved Australia.

Keywords Suicide; General Hospital; Somatic Hospital; Inpatient; Suicidal thoughts and behaviours; Suicidality.

Contributions of each author

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