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Epidemiology, Risk Factors, and Interventions for Suicide in Chinese Populations: A Systematic Review, Scoping Review, and Meta-analyses

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ADMINISTRATIVE INFORMATION

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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 26 September 2025 and was last updated on 26 September 2025.

INTRODUCTION

Review question / Objective This review aims to comprehensively map empirical evidence on suicide among Chinese populations, focusing on three key questions:

1. What is the prevalence and epidemiological profile of suicidal ideation, planning, and attempts in the general population and specific subpopulations in China?
2. What are the risk and protective factors of suicidal ideation, planning, and attempts among Chinese populations?
3. What prevention and intervention programs targeting suicidal ideation, planning, and attempts have been implemented and evaluated in China?

Rationale Although many individual studies on suicide in China exist, no review has systematically synthesized the full spectrum of evidence—from epidemiological patterns to determinants and

intervention effects—across different age groups and settings. Existing reviews have typically focused on a single population (e.g., adolescents) or a single dimension (e.g., risk factors). This review will address that gap by combining complementary approaches: a meta-analysis of epidemiological studies (Study 1), a systematic review of risk and protective factors (Study 2), and a scoping review of prevention and intervention programs (Study 3). Together, these studies aim to map the entire evidence landscape, providing a solid foundation for policy development and future targeted interventions.

Condition being studied Suicide (including suicidal ideation, planning, and attempts) among Chinese populations.

METHODS

Search strategy Searches will be conducted in three English-language databases—Web of

Science (Core Collection), PubMed, and PsycINFO—and three Chinese-language databases—CNKI, Wanfang, and Weipu, limited to Chinese core journals (CSSCI, CSCD, Peking University Core Journals). Additional references will be identified through citation and Google Scholar searches.

Search terms

Search terms will combine four main concepts linked with the Boolean operator (AND), including suicide-related terms, risk/intervention terms, and geographic terms. Related subject headings (e.g., MeSH in PubMed, APA Thesaurus terms in PsycINFO) will be used where available.

(1)Suicide-related: Suicid*

(2)Risk/protective-related (for Study 2 only): longitudinal*, cohort*, prospective*, case control, case-control, retrospect*, future, later, follow-up, follow*, temporal*, trajector*, predict*, antecedent*, precursor*, causal*, mediat*, risk*, protect*, gene*

(3)Intervention-related (for Study 3 only): intervent*, prevent*, project*, program*, therap*, solution*, service*, treat*, train*, manag*, campaign, strateg*, guideline*, counsel*, psychoeducation, support*, evaluation, trial, RCT, Randomized Controlled Trial, effectiveness, educat*, psychotherap*, promot*

(4)Geographic: China OR Chinese

Participant or population Study samples must be drawn from populations in mainland China, and studies must clearly report where the sample came from. Sample types include those from the general population and clinical samples. During data extraction, samples may be coded by source type and age group; subgroup analyses or stratified reporting will be conducted in the meta-analysis, systematic review, and scoping review.

Intervention The review will focus on suicide-related issues, including prevalence, risk and protective factors, and interventions or prevention programs. Eligible studies must clearly report at least one of the following outcomes:

1. Suicidal ideation: having thoughts about ending one's life.
2. Suicidal plan: considering and intending to use a specific method to end one's life.
3. Suicide attempt: engaging in behavior that could lead to self-injury, with some degree of suicidal intent.

For studies that use slightly different definitions, the specific operational definitions will be recorded during data extraction, and their potential impact will be examined in the analysis. In addition, Studies 2 and 3 will also consider suicidality as the

outcome (a composite construct encompassing ideation, planning, and attempts).

In addition, for intervention studies, the review will include programs specifically targeting suicide prevention or reduction, such as psychological therapies, pharmacological treatments, school- or community-based programs, and digital interventions. The content, delivery format, and target population of each intervention will be recorded in detail.

Comparator For study 3 (prevention and intervention): Any type of comparator.

Study designs to be included Eligible studies must be original empirical research (e.g., cross-sectional, longitudinal, prospective cohort, case-control, or randomized controlled trials) or evidence syntheses (systematic reviews or meta-analyses). Because the objectives of the three studies differ, the types of literature to be included will also vary.

Eligibility criteria

Inclusion criteria:

(1)Publication status: Studies published in peer-reviewed journals between 01 Jan 2000 and 26 Sep 2025, with extractable data.

(2)Focus of review: Studies must address suicide-related outcomes (suicidal ideation, suicide plan, suicide attempt), including prevalence, risk and protective factors, or interventions/prevention programs.

(3)Study type: Original empirical research (e.g., cross-sectional, longitudinal, prospective cohort, case-control, randomized controlled trial) or evidence syntheses (systematic reviews, meta-analyses).

(4)Language of publication: Only studies published in Chinese or English will be included.

(5)Study population: Samples must be drawn from populations in mainland China, and the study must clearly report the origin of the sample.

Exclusion criteria:

A study will be excluded if it meets any one of the following conditions:

(1)The study's outcomes are not related to suicide-related issues (including suicide ideation, suicide plan or suicide attempt).

(2)The study does not clearly distinguish suicide from other mental health-related behaviours (such as non-suicidal self-injury, intentional self-harm), or its outcome analyses combine suicide with accidental death, composite mental health indicators, etc., such that suicide data cannot be extracted or analysed separately.

(3)The study population is not from Chinese people, or the sample origin is unclear, or the Chinese sample data cannot be separately extracted.

(4)The study is not peer-reviewed (for example, conference abstracts, theses/dissertations, grey literature, policy reports, etc.).

(5)The study lacks extractable core data (such as sample size, effect sizes, significance, prevalence, etc.) or does not include original empirical data (for example, purely theoretical reviews or narrative summaries).

(6)The study is a duplicate using the same dataset/ population.

Part-specific inclusion/exclusion:

Epidemiology (Study 1):

Additional inclusion criteria:

(1)Only cross-sectional or cohort studies are included.

(2)Must clearly state the measurement tool (e.g., questionnaire, diagnostic interview) and the time frame (e.g., past 12 months, lifetime prevalence).

(3)Must clearly report suicide-related prevalence or incidence in the Chinese population, or provide necessary statistics for computing prevalence or for meta-analysis (such as sample size, number of cases, percentages, confidence intervals, etc.).

Additional exclusion criteria

(1)Studies that do not report suicide prevalence/ incidence or lack the necessary statistics for calculation/combination.

(2)Studies with designs other than cross-sectional or cohort: e.g., reviews (umbrella/scoping), case reports or case series, Global Burden of Disease (GBD) model estimates, randomized controlled trials (RCTs), interventional studies, or case-control studies, etc.

Risk/protective factors (Study 2):

Additional Inclusion Criteria

(1)Studies must report suicide-related risk or protective factors in the Chinese population, including but not limited to biological factors, demographic factors, psychosocial factors, mental disorder-related factors, and environmental factors.

(2)Studies must provide quantitative results that can be computed (e.g., regression coefficients, OR, RR, HR, β , correlation r , etc.), with data that allow extraction or calculation of effect sizes.

(3)To differentiate between correlates (i.e., associated factors) and risk factors (i.e., predictive factors), this section requires that the study design establish a temporal relationship where the risk factor precedes the outcome. On this basis, the review will only include longitudinal studies (e.g., prospective cohort). Cross-sectional studies will be

included only if the risk factor is an innate attribute (e.g., a genetic variant) from which temporality can be reasonably inferred.

Additional Exclusion Criteria

(1)Studies whose primary purpose is intervention or treatment (i.e., treatment effect studies), because intervention effects may confound the relationship between risk factors and suicide outcome.

(2)Studies in which the time sequence between risk factor and outcome cannot be established or inferred will be excluded.

(3)Secondary research, such as systematic reviews, meta-analyses, and narrative reviews, will be excluded to ensure the analysis is based on primary data.

Interventions (Study 3):

Additional Inclusion Criteria

(1)The study must be conducted in Chinese populations, with a primary aim of suicide prevention or intervention, including but not limited to: psychological interventions, pharmacotherapy, social prescriptions, school/community/digital programs, etc.

(2)The study must clearly report the intervention content, the study design, the core outcome indicators, and the statistical results, in which outcomes must include suicide-related indicators (e.g., suicide ideation, suicide plan or suicide attempt) and their significance tests (e.g, p-values, effect sizes, confidence intervals, etc.).

Additional Exclusion Criteria

(1)Studies whose intervention is primarily targeting non-suicidal outcomes (e.g. depression, anxiety, academic stress, etc.), and in which suicide-related indicators are not preset as core outcomes but appear only as secondary, exploratory, or post hoc analyses; For example: a study whose main intervention target is depression (PHQ-9), and although results are significant for depression, the suicide-related outcome was not a primary target but only appears in ancillary analysis.

Information sources Searches will be conducted in three English-language databases—Web of Science (Core Collection), PubMed, and PsycINFO—and three Chinese-language databases—CNKI, Wanfang, and Weipu, limited to Chinese core journals. In addition, we will perform citation searches and use Google Scholar to identify additional references. Grey literature, such as government reports, dissertations, and conference proceedings, will not be included.

Main outcome(s)

Study 1: Prevalence of Suicide-related issues

Objective: To estimate the pooled prevalence of suicidal ideation, suicide plan, and suicide attempt in Chinese populations through a systematic review and meta-analysis.

Data Synthesis: Meta analysis will be conducted to assess the pooled prevalence of suicide-related outcomes.

Effect Measure: Prevalence rates for each suicide-related outcomes across general populations and others.

Study 2: Risk and Protective Factors

Objective: To identify and analyze the risk and protective factors of suicide-related outcomes in Chinese populations.

Data Synthesis: If study designs and reported outcomes are sufficiently homogeneous, we will conduct a meta-analysis to quantify the effects of key risk and protective factors. If heterogeneity is high, only a descriptive synthesis will be performed.

Effect Measure: Effect sizes (for example, odds ratios, correlation coefficients) for the relationship between factors and suicide outcomes.

Study 3: Suicide Prevention and Intervention Programs

Objective: To evaluate the effectiveness of suicide prevention and intervention programs implemented in China.

Data Synthesis: A descriptive synthesis will be conducted, summarizing the nature of the interventions and their target populations. This part will not include meta-analysis.

Data management Covidence will be used as the platform for managing records and data throughout the study process. This platform enables efficient data organization, screening, and extraction.

Quality assessment / Risk of bias analysis

Study 1: The criteria developed by Hoy et al (2012).

Study 2: Newcastle-Ottawa Scale (NOS)

Study 3: RCTs: JBI Critical Appraisal Checklist for Randomized Controlled Trials; Quasi-experimental studies: JBI Critical Appraisal Checklist for Quasi-Experimental Studies.

Strategy of data synthesis

Data synthesis will be conducted across three main areas: prevalence, risk factors, and intervention programs.

(1)Prevalence: A meta-analysis will be performed to estimate the pooled prevalence of suicide-

related outcomes (suicidal ideation, plans and attempts) in Chinese populations.

(2)Risk Factors: For studies on risk and protective factors, we will first assess the homogeneity of the data. If the studies are sufficiently comparable, a meta-analysis will be conducted. If not, a descriptive summary will be provided.

(3)Interventions: A descriptive synthesis will be used for intervention studies, with no meta-analysis performed. We will summarize the key components and effects of the interventions on suicide-related outcomes.

All results will be presented in structured tables and figures, with limitations clearly outlined.

Subgroup analysis Given the complexity of the suicide concept, we will differentiate between suicidal ideation, suicide plan and suicide attempt in our analysis. Data will be analyzed separately for each of these outcomes. In addition, we will explore differences between clinical and non-clinical populations, as well as age-related differences. This will allow for a more nuanced understanding of suicide across various subgroups.

Sensitivity analysis For meta-analysis, we will examine the impact of excluding studies with a high risk to determine if results are stable.

Language restriction English and Chinese.

Country(ies) involved China.

Keywords Suicide; Suicide ideation; Suicide attempts; Risk factors; Protective factors; Prevention; Intervention; China; Epidemiology; Prevalence; Suicide prevention.

Contributions of each author

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