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Title:

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Date:

2025-12-01

Citation:

Aon, M., Brasholt, M., Khabsa, J. & Borschmann, R. (2025). Self-harm and suicide in prisons in low- and middle-income countries: protocol for a systematic review of prevalence and risk factors. *Systematic Reviews*, 14 (1), pp.179-. <https://doi.org/10.1186/s13643-025-02880-6>.

Persistent Link:

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PROTOCOL

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Self-harm and suicide in prisons in low- and middle-income countries: protocol for a systematic review of prevalence and risk factors

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Abstract

Background Suicide is a leading cause of death in prisons, and documented rates of self-harm (an established risk factor for suicide) are disproportionately higher in prisons than in the general population. However, research to date has focused largely on high-income countries, and as patterns of suicide and self-harm vary across cultures, there is an urgent need for research examining these phenomena in prisons in low- and middle-income countries. This review will synthesize findings from the published literature regarding the prevalence of, and risk factors for, suicide and self-harm among incarcerated persons in prisons in low- and middle-income countries.

Methods We will search six electronic databases (MEDLINE, Embase, Scopus, PsycINFO, the National Criminal Justice Reference Service (NCJRS), and Global Index Medicus) for studies published in any language from database inception until 1 March 2024 reporting the prevalence and/or risk factors for self-harm and/or suicide in prisons in low- and middle-income countries (as defined by the World Bank). Grey literature will be identified by searching Google, Proquest, the Networked Digital Library of Theses and Dissertations (NDLTD), and websites such as CADTH's Grey Matters. We will not restrict eligibility by age, gender, sentence type, or sentence duration. The risk of bias will be assessed using the Newcastle–Ottawa Quality Assessment Scale (NoS) and the Joanna Briggs Institute (JBI) checklists for prevalence and qualitative studies. Data addressing prevalence and incidence will be synthesized in narrative and graphic format. If sufficient data addressing risk factors for suicide and self-harm are identified, they will be meta-analyzed using the pooled adjusted odds ratio (with 95% confidence intervals). Sensitivity analysis will be conducted as appropriate. Meta-biases such as publication and outcome reporting bias will be assessed. Finally, the Grading of Recommendations Assessment, Development and Evaluation (GRADE) will be used to assess the certainty of evidence collected in this systematic review.

Discussion Findings from this review will contribute to strengthening our understanding of self-harm and suicide in carceral settings in low- and middle-income countries and may be used to inform prevention efforts.

Systematic review registration Our systematic review protocol is registered with the International Prospective Register of Systematic Reviews (PROSPERO; CRD42022382012).

Keywords Suicide, Self-harm, Self-injurious behavior, Prisons, Incarceration, Middle-income country, Low-income country

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Background

Suicide has been described as the “single most common cause of death in prison settings” accounting for half of all prison deaths globally [1]. A study of the prevalence and risk factors of suicide in prisons in 24 high-income countries (HICs) demonstrated considerably higher rates inside prisons than in the surrounding community [2]. Rates of self-harm (defined as “an act with a non-fatal outcome in which an individual deliberately initiates behaviour (such as self-cutting) or ingests an illicit drug or non-ingestible substance or object, with the intention of causing harm to themselves” [3] are also higher in incarcerated populations than in the general population [4].

Although 79% of suicides occur in low- and middle-income countries (LMICs), our recent scoping review reported that most published articles on suicide and self-harm in prisons and jails have focused on high-income, frequently Western, countries [5, 6]. For example, a 2021 review on suicide in prisons found 77 eligible studies, of which only one was from an LMIC, while a 2022 review of suicide attempts in prisons included data from only one LMIC among the 20 included countries [7, 8]. Additionally, a 2020 review on self-harm in prisons with 663,735 cases included none from LMICs [4]. Importantly, the authors of all three reviews rightly cautioned against applying their findings to LMIC contexts and recommended further research from LMIC prisons [4, 7, 8]. A 2022 rapid review of suicide risk in LMIC prisons also highlighted the need for more thorough and systematic research [9]. The rapid review did not examine prevalence or risk factors for self-harm. It limited its search by date, language, and age, and it did not include a meta-analysis.

As efforts are underway to identify and describe the factors contributing to higher suicide rates in carceral settings and the effectiveness of various related interventions, nuances about geographical and cultural differences may be missed [10]. Specifically, it is unclear whether suicide constitutes the major cause of death in LMIC prisons as it does in HIC prisons. It is also unclear whether the risk factors associated with suicide and self-harm in LMIC prisons are similar to those in HIC prisons. There is an urgent need to better understand this to enable evidence-informed prevention and management of suicide and self-harm in LMIC prisons.

The objective of this review is to determine the prevalence of self-harm, suicide, and suicidal behavior (including suicide attempts and suicidal ideation) and to establish key risk and protective factors for suicide and self-harm among incarcerated persons in LMICs. Our research will specifically focus on the following questions relating to carceral settings in LMICs:

- 1) What is the prevalence of suicidal ideation and incidence of fatal and non-fatal suicide attempts?
- 2) What is the prevalence of self-harm and self-harm ideation?
- 3) Which risk and protective factors influence suicide and self-harm, and to what degree?

Methods

This protocol is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) [11].

Patient and public involvement

There was no patient or public involvement in the design of this study.

Eligibility criteria

Studies will be selected according to the criteria outlined below:

Condition

We will include all studies addressing the following conditions that have taken place during a person's time in a prison or jail:

- Death by suicide
- Suicide attempt
- Suicidal ideation
- Acts of self-harm
- Risk/ideation of self-harm

Context

All prisons and jails in LMICs, as defined by the World Bank [12].

Population

All adult and juvenile persons in the above prisons and jails of all genders, including pre-trial (remand) and sentenced persons for any offence(s), regardless of the length of time spent incarcerated.

Study types

Both published and unpublished studies (including grey literature) covering all study designs in any language will be included in this systematic review.

Information sources and search strategy

We will search MEDLINE, Embase, Scopus, PsycINFO, the National Criminal Justice Reference Service (NCJRS), and Global Index Medicus from database inception

until the search date. This will be supplemented by hand searches of study reference lists to ensure literature saturation.

The MEDLINE search strategy was created in collaboration with a health sciences librarian from The American University of Beirut with expertise in systematic review searching. The MEDLINE strategy was adapted to the syntax and subject headings of the other databases and checked again by a second health sciences librarian at the same university. The full search strategies can be found in the Appendix.

Grey literature will be identified by searching Google using the strings in our search strategy. We will further search the websites of relevant non-governmental agencies using the Google custom search “NGO search” The first five pages of results will be examined. To locate dissertations and theses, we will search Proquest and the Networked Digital Library of Theses and Dissertations (NDLTD). We will further explore the use of websites to access grey literature and pre-prints such as the Canadian Agency for Drugs and Technologies in Health (CADTH) Grey Matters website and med-archive (MedRxiv).

Outcome measures

The outcomes for which data will be sought are any of the following, taking place in LMIC carceral settings (prisons and jails):

- Death by suicide
- Suicide attempt
- Suicidal ideation
- Acts of self-harm
- Risk/ideation of self-harm

It should be noted that each of the outcomes will be treated independently from the others.

Definitions

Acts of self-harm are defined as “an act with a non-fatal outcome in which an individual deliberately initiates behavior (such as self-cutting) or ingests an illicit drug or non-ingestible substance or object, with the intention of causing harm to themselves.” [3]. Attempted suicide is defined as “a self-initiated sequence of behaviors by an individual who, at the time of initiation, expected that the set of actions would lead to his or her own death.” [13]. A fatal suicide attempt is one resulting in the individual's death. The term “prisons” is used broadly to include all carceral settings where people are detained, including prisons and jails (both pre-trial and sentenced). LMIC refers to low and middle-income countries as defined by the World Bank, specifically countries with Gross National Incomes (GNI) per capita of USD 12,695 or less

[12]. Data will only be included if the incident took place during a person's time in a prison or jail regardless of the location of death (e.g., hospital).

We will examine the association between individual and ecological risk and protective factors for our primary and secondary outcomes. Data on risk factors will feature in the data extraction form that we will use for data collection.

Data selection, extraction, and management

Search results will be uploaded to Rayyan software [14]. Article selection will take place in two stages. The initial screening at the title/abstract stage will be completed independently by two reviewers following a calibration exercise. All citations will then be screened independently by the two reviewers. The degree of agreement will be calculated (kappa statistic) and will be followed by a discussion between the reviewers to resolve any disagreements, whether on inclusion or reasons for exclusion. Full texts will be obtained for all articles judged as eligible by at least one reviewer. The second stage will consist of full text screening. The reviewers will divide articles between them for screening independently. We will record reasons for exclusion at the full text screening stage. If not resolved by discussion, disagreements will be resolved with the help of the third reviewer. Should there be multiple reports of the same study, these will be linked and documented.

A data extraction form based on the study objectives will be used for data collection. The form will be piloted, and a calibration exercise will be conducted. Thereafter, all reviewers will use the standardized form to extract data independently. The draft data extraction form is located in the Appendix. Where clarification is needed, we will make a maximum of three attempts to contact the original study authors for further information. Translation will be sought if needed for articles in a language not mastered by any of the authors.

Independent analyses will be conducted for quantitative and qualitative data in line with the convergent segregated approach [15].

Extracted data will include, at a minimum, the following: study and reviewer identifiers; study characteristics (study objectives, design, and methodology); setting characteristics (country, detention type (prison/jail) and facility capacity/occupation); population characteristics (adult or juvenile, age, sex, sentenced or remand, and other relevant information); outcomes (suicide or self-harm and risk or act, including the definitions used for each of them); exposure if reported (risk factors and whether those included ecological and individual risk factors); other study specifications (funding source, conflict of interest and ethical approval); and final notes such

as useful references, unclarities requiring author correspondence, and general comments. In addition, we will extract prevalence estimates for each of the outcomes of interest (e.g., proportions or rates with confidence intervals, or number of those reporting the outcome and number of total population if proportions are not reported). We will also extract effect estimates for association, such as odds ratios and their confidence intervals. For qualitative studies, we will extract themes and sub-themes, author interpretations, and relevant quotes.

Risk of bias

We will assess the risk of bias both at the study and outcome levels using the Newcastle–Ottawa Quality Assessment Scale (NoS) [16]. The tool can be applied to case–control studies, cohort studies, and cross-sectional studies. The tool covers questions addressing selection, comparability, and exposure/outcome-related bias. The risk of bias in descriptive observational studies and qualitative studies will be assessed using the JBI checklists for prevalence and qualitative studies [17]. The checklists consist of a set of standard questions to be answered by yes, no, unclear, or non-applicable. The questions assess methodological rigor and quality, including sampling, measurement, and data analysis. The tools will be piloted by three reviewers on the same set of limited studies. The results will be used to calibrate reviewers' application of the tools.

For every domain, we will describe the procedures undertaken for each study, including verbatim quotes. Risk of bias assessments will be conducted independently by the reviewers for all included studies using tool instructions. We will collate results and provide mean quality scores. The scores will be considered in data synthesis, and conclusions drawn from studies will be presented alongside the strength of their evidence.

Data synthesis

Quantitative data synthesis

We will present prevalence measures using narrative and tabular formats. If the characteristics of the studies are sufficiently similar and the data are available in the appropriate form, we will conduct a meta-analysis to effect estimates of the association between risk and protective factors and our outcomes of interest. Owing to expected heterogeneity between studies in, for example, outcome definitions and subpopulations assessed, it may not be possible to conduct a meta-analysis. In such circumstances, data will be synthesized in narrative and tabular format.

If a meta-analysis is conducted, the pooled effect measure will be the pooled adjusted odds ratio (with

95% confidence intervals). This will be conducted for all outcomes and risk factors reported in at least two studies. We will use the Mantel–Haenszel method for the random-effects model and will generate an I^2 statistic to estimate heterogeneity. We will use *Review Manager (RevMan Web) Version 7.1.3* software for the meta-analysis [18].

Sub-group analyses will be conducted in the case of moderate to high heterogeneity (>30%) to explore the source of heterogeneity. The specific sub-groups may be determined by study design, population characteristics (e.g., age, sex, sentence, and mental health status) and context (e.g., prison vs. jail, and exposure to solitary confinement). Sensitivity analysis will be conducted to assess the robustness of the findings. The sensitivity analysis will be performed to assess robustness by omitting studies with a high risk of bias and adding the crude odds ratios from studies that do not report adjusted odds ratios and examine the difference in results.

Qualitative data synthesis

We will use the convergent segregated approach as outlined by Stern et al. in their JBI methodological guidance for mixed methods systematic reviews [15]. The convergent segregated approach is employed where quantitative data are expected to answer a separate question from qualitative data.

Since the topic does not lend itself to new higher order constructs, we expect that the most appropriate type of synthesis will be thematic synthesis [19]. We will follow the approach described by Thomas and Harden [20]. The first stage consists of the coding of findings of the included studies, looking for similarities and differences between codes. If similarities are found, these may be developed into descriptive themes. If data allow, this can be followed by the development of analytical themes. Themes and quotes will be used to conduct independent, simultaneous synthesis without transformation of qualitative data to quantitative. The convergent segregated synthesis will either be narrative or pooled to produce a meta-aggregation. This will depend on the studies included in the systematic review. Should studies address the same risk or protective factors or be highly comparable, the pooled approach will be adopted. Should studies differ substantially in their questions or the population they describe, the narrative synthesis approach will be adopted. In either case, diligence will be employed to ensure findings are not extended to populations or risk/protective factors on which the data were not extracted.

General considerations

Results will be collated into risk and protective factors, after which critical comparisons will be made. This could include a comparison of our findings with existing systematic reviews from high-income countries. It could also include an analysis across studies on specific risk or protective factors.

Once synthesis is complete, the body of evidence from qualitative studies will be integrated with the quantitative evidence by comparing the findings and analyzing how one explains or complements the other. Studies with a high risk of bias will be identified, and analysis of studies' methodological features will be conducted if appropriate.

Meta-bias(es) and confidence in cumulative evidence

If the number of full-text articles in our meta-analysis exceeds ten articles, we will generate a funnel plot of effect estimates and standard error to explore the potential for publication bias. If funnel plot asymmetry is present, we will seek to examine potential sources, including reporting bias. We will evaluate outcome reporting bias by examining the presence of selective outcome reporting. This will be done by comparing the results and methods sections in the study.

The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework will be used to assess the certainty and strength of evidence collected in this systematic review [21]. Specifically, given the nature of our objectives, we will follow the GRADE guidance for the assessment of evidence about prognostic factors to assess the certainty in any pooled effect estimate of association (i.e., odds ratio) [22]. According to this guidance, included studies of observational nature begin as high certainty in the evidence. We will assess all GRADE domains (risk of bias, consistency, directness, imprecision, and publication bias) for each outcome of interest and then adjust downwards based on these domains or adjust upwards if any of the following is present: large effect, dose response, and plausible confounding. A final decision regarding the confidence in each effect estimate of interest will be classified into one of four categories: (1) high (*very confident*); (2) moderate (*moderately confident*); (3) low (*limited certainty*); or (4) very low (*very little certainty*) [22]. We may use software for this process, such as GRADEpro GDT [23]. We will not assess the certainty of evidence for our prevalence questions.

Should there be qualitative studies in our analysis, we will use Confidence in the Evidence from Review of Qualitative Research (GRADE-CERQual). This uses a similar approach to GRADE, taking into consideration four aspects of the research: (1) methodological

limitations; (2) coherence; (3) adequacy of data; and (4) relevance [24].

Discussion

Suicide is described as the leading cause of death in prisons. Similarly, self-harm rates are normally higher in prisons than among the general population. Yet most research emanates from high-income and mostly Western countries. This review aims to assemble and summarize knowledge on suicide and self-harm in prisons and jails of LMICs to shed light on the nuances of geographical and cultural similarities and differences shaping these behaviours. It is hoped that the findings can contribute to evidence-informed prevention and management of suicide and self-harm in LMIC carceral settings.

Abbreviations

AUB	American University of Beirut
CADTH	Canadian Agency for Drugs and Technologies in Health
CRI	Clinical Research Institute
GNI	Gross National Income
GRADE	Grading of Recommendations, Assessment, Development, and Evaluation
GRADE-CERQual	Confidence in the Evidence from Review of Qualitative Research
HIC	High-income country
JI	Joanna Briggs Institute
LMIC	Low- and middle-income country
NCJRS	National Criminal Justice Reference Service
NDLTD	Networked Digital Library of Theses and Dissertations
NoS	Newcastle-Ottawa Quality Assessment Scale
PRISMA-P	Systematic Reviews and Meta-Analysis Protocols
PROSPERO	International Prospective Register of Systematic Reviews

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13643-025-02880-6>.

Additional file 1. Annexes 1–3

Acknowledgements

We thank Dr. Elie Akl for technical guidance throughout the protocol development and Ms. Loyal Hneiny for guidance in developing the literature search strategy.

Authors' contributions

Maha Aon drafted the protocol while both Joanne Khabsa and Marie Brasholt provided substantial input to different versions of it. Rohan Borschmann critically reviewed the draft protocol and provided input to subsequent iterations. Maha Aon developed the search strategy with technical input from Joanne Khabsa. Maha Aon is the guarantor of the review.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. Maha Aon and Marie Brasholt are employed by the Danish Institute against Torture, DIGNITY. Joanne Khabsa is employed by the American University in Beirut (AUB). Rohan Borschmann receives salary and research support from a National Health and Medical Research Council (NHMRC, Australia) Emerging Leadership Investigator Grant (EL2; GNT2008073). Access to paid journals and databases is provided by the Danish Institute against Torture, DIGNITY and the American University in Beirut (AUB).

Data availability

All data generated or analyzed during this study will be included as much as possible in the published article and its supplementary information files. Other data can be obtained upon request from the corresponding author.

Declarations**Ethics approval and consent to participate**

This review is exempt from ethics approval. Our findings will be disseminated through peer-reviewed publications, conference presentations, and partner communication.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Received: 5 February 2024 Accepted: 9 June 2025

Published online: 26 September 2025

References

- Fazel S, Grann M, Kling B, Hawton K. Prison suicide in 12 countries: an ecological study of 861 suicides during 2003–2007. *Soc Psychiatry Psychiatr Epidemiol.* 2011;46(3):191–5.
- Fazel S, Ramesh T, Hawton K. Suicide in prisons: an international study of prevalence and contributory factors. *The Lancet Psychiatry.* 2017;4(12):946–52.
- Madge N, Hewitt A, Hawton K, de Wilde EJ, Corcoran P, Fekete S, et al. Deliberate self-harm within an international community sample of young people: comparative findings from the Child & Adolescent Self-harm in Europe (CASE) Study. *J Child Psychol Psychiatry.* 2008;49(6):667–77.
- Favril L, Yu R, Hawton K, Fazel S. Risk factors for self-harm in prison: a systematic review and meta-analysis. *Lancet Psychiatry.* 2020;7(8):682–91.
- Aon M, Warborg Larsen MM, Brasholt M. Suicide and self-harm in prisons - literature review. Copenhagen, Denmark: DIGNITY, Danish Institute against Torture; 2018 p. 36. (DIGNITY Publication Series on Torture and Organised Violence). Report No.: 23. Available from: https://www.dignity.dk/wp-content/uploads/publication_series_no23.pdf.
- WHO. Suicide. 2019. Available from: <https://www.who.int/news-room/fact-sheets/detail/suicide>.
- Zhong S, Senior M, Yu R, Perry A, Hawton K, Shaw J, et al. Risk factors for suicide in prisons: a systematic review and meta-analysis. *The Lancet Public Health.* 2021;6(3):e164–74.
- Favril L, Shaw J, Fazel S. Prevalence and risk factors for suicide attempts in prison. *Clin Psychol Rev.* 2022;97: 102190.
- Hill K, Wainwright V, Stevenson C, Senior J, Robinson C, Shaw J. Prevalence of mental health and suicide risk in prisons in low- and middle-income countries: a rapid review. *Journal of Forensic Psychiatry and Psychology.* 2022;33(1):37–52.
- Carter A, Butler A, Willoughby M, Janca E, Kinner SA, Southalan L, et al. Interventions to reduce suicidal thoughts and behaviours among people in contact with the criminal justice system: A global systematic review. *EClinicalMedicine.* 2022;44: 101266.
- Moher D, Shamseer L, Clarke M, Gherzi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev.* 2015;4(1):1.
- World Bank Group. How does the World Bank classify countries? – World Bank Data Help Desk. Available from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries>. [cited 2022 Jul 11].
- APA. APA - Diagnostic and statistical manual of mental disorders fifth edition text revision DSM-5-TR. 2022. Available from: [https://www.appi.org/Products/DSM-Library/Diagnostic-and-Statistical-Manual-of-Mental-Di-\(1\)?sku=2576](https://www.appi.org/Products/DSM-Library/Diagnostic-and-Statistical-Manual-of-Mental-Di-(1)?sku=2576). [cited 2022 Jun 6].
- Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews.* 2016;5(1). Available from: <https://link.springer.com/epdf/10.1186/s13643-016-0384-4>. [cited 2023 Mar 12].
- Stern C, Lizarondo L, Carrier J, Godfrey C, Rieger K, Salmond S, et al. Methodological guidance for the conduct of mixed methods systematic reviews. *JBI Evidence Synthesis.* 2020;18(10):2108–18.
- Wells, Shea, O'Connell, Peterson, Welch, Losos, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. 2013. Available from: http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp. [cited 2021 Apr 9].
- Aromataris E, Munn Z. JBI Manual for evidence synthesis. 2020. Available from: <https://synthesismanual.jbi.global>.
- The Cochrane Collaboration. Review Manager Web (RevMan Web). Version 7.1.3. 2024. Available from: revman.cochrane.org.
- Flemming K, Noyes J. Qualitative evidence synthesis: where are we at? *Int J Qual Methods.* 2021;20:1609406921993276.
- Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Med Res Methodol.* 2008;8(1):45.
- Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ.* 2008;336(7650):924–6.
- Foroutan F, Guyatt G, Zuk V, Vandvik PO, Alba AC, Mustafa R, et al. GRADE Guidelines 28: use of GRADE for the assessment of evidence about prognostic factors: rating certainty in identification of groups of patients with different absolute risks. *J Clin Epidemiol.* 2020;121:62–70.
- McMaster University, Evidence Prime. GRADEpro GDT: GRADEpro Guideline Development Tool. 2022. Available from: grade.pro.
- Lewin S, Booth A, Glenton C, Munthe-Kaas H, Rashidian A, Wainwright M, et al. Applying GRADE-CERQual to qualitative evidence synthesis findings: introduction to the series. *Implement Sci.* 2018;13(Suppl 1):2.

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