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Suicidal Behavior Comorbidities in Old Adults: A Systematic Review and Meta-Analysis

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Juliano Flávio Rubatino Rodrigues¹

¹Faculdade de Medicina de São José do Rio Preto



Juliano Flávio Rubatino Rodrigues

Faculdade de Medicina de São José do Rio Preto

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We use this protocol and it's working



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Abstract

We used the PRISMA statement and defined the PECOS strategy, such as Population (P) = old adults; exposure (E) = mental disorders; comparison (C) = without mental disorders; outcome (O) = suicidal behavior; and study design(S) = all kinds of studies with an association any comorbidities in old adults and suicidal behavior published in the last ten years. Meta-analysis compared studies (case-control and cohort) with and without comorbidity with suicidal behavior to evaluate the log odds ratio (logOR).

Protocol

1 Introduction

In 2017, global suicide rates among old adults were 16.17 individuals per 100,000 population in the 50–69 age group and 27.45 individuals per 100,000 population in the 70+ age group.[1] These numbers became worrying during the pandemic, where loneliness led many old adults to consider suicide.[2] These numbers remained high after the pandemic, with suicide mortality rates recorded in the United States in 2022 among people over 85 years of age at 27.1 per 100,000 inhabitants.[3]

In an epidemiological study in Brazil (2012 to 2016), the highest suicide rates were concentrated in the population over 80, which presented a mean 8.4/100,000 for this period, and between 70 and 79 years, with a mean rate of 8.2/100,000. Considering the total old adults over 60 years, this value reached 7.8/100,000, whereas this was 5.3/100,000 in the general population. The values are consistently higher among old adults: the mean rate in the last five years among old adults is 47.2% higher than the mean for the general population. [4] Aware of this new demand, an increase of more than 100% in suicide rates was observed in the state of São Paulo in Brazil in the last decade.[5]

2 Objective

This study aims to search for comorbidities with suicidal behavior in old adults. Specifically, the objectives are:

1. To systematically review and synthesize the evidence on the association between comorbidities and suicidal behavior (suicidal attempt, suicidal ideation, and suicide) in old adults.
2. To identify common factors associated with comorbidities and suicidal behavior.
3. To conduct meta-analyses, where feasible, to quantify the overall effect sizes of the associations between comorbidities and suicidal behavior.

3 Methods

3.1. Study design

This study proposes to investigate comorbidities associated with suicidal behavior in old adults. This systematic review follows the PRISMA methodology [6]. After review, a meta-analysis will proceed.

3.2. Selection criteria

We used the PRISMA statement and defined the PECOS strategy, such as Population (P) = old adults; exposure (E) = mental disorders; comparison (C) = without mental disorders; outcome (O) = suicidal behavior; and study design(S) = all kinds of studies with an association any comorbidities in old adults and suicidal behavior published in

the last ten years. To be eligible to be included in the review, studies had to meet the following criteria: They had to include a paper that reported suicidal ideation, suicide attempt, or suicide in old adults and comorbidities. We excluded every study that did not describe a possible association between comorbidities and suicidal behavior (suicidal ideation, suicide attempt, or suicide) in old adults. Previous reviews were included to verify the understanding and findings of other researchers. Being an old adult was over 60 years old. Two authors systematically searched, read, and shared the findings of the eligible papers.

3.3. Search Strategy

Following the PRISMA, the defined papers' titles and abstracts are eligible and non-restricted languages without time limits. Furthermore, it was systematically identified by searching electronic databases Embase [Emtree - Major Focus Exp.], Pubmed [Mesh Terms], and Lilacs - Complete collection of the Virtual Health Library [Title/abstracts], in November 2024.

3.4. Quality assessment

It will use the Newcastle–Ottawa Quality Assessment Scale (NOQAS) to measure the methodological quality of studies, controlling for publication bias in case-control and cohort studies [7]. Two reviewers (LPR and JFRR) will independently assess the studies' quality. Disagreements will be resolved through discussion and consensus or with arbitration by a third reviewer (LLC). Based on the total NOQAS score, studies will be categorized into risk of bias levels: Minimal risk of bias: Score of 7 or more; Low risk of bias: Score of 5 to 6; Medium risk of bias: Score of 3 to 4; High risk of bias: Score of 0 to 2. Quality assessment will be used to contextualize the findings. It may inform sensitivity analyses, such as excluding studies with a high risk of bias to assess the robustness of the overall results.

3.5. Data extraction

The data will be extracted into two tables describing insomnia-related factors. Factors associated with insomnia in the two parallel reviews will be compared through exploratory factor analysis to identify and extract commonalities. Data extraction will be performed independently by two reviewers (JFRR and LPR) using a pre-piloted, standardized data extraction form. Discrepancies will be resolved through discussion and consensus or with arbitration by a third reviewer (GMAF). The data extraction form will capture the following information from each included study:

- **Study characteristics:** Author(s), year of publication, country of study, study design, sample size, population characteristics (age, gender, clinical characteristics).

- **Comorbidities:** describe how the type of comorbidities was associated with suicidal behavior.
- **Key findings and conclusions of the study.**

3.6. Analysis

3.6.1. Data Synthesis and Meta-analysis:

Meta-analyses will be conducted using SPSS software version 29 [or equivalent]. We will use random-effects models to account for potential heterogeneity between studies. Heterogeneity will be assessed using the I^2 statistic, with values of 25%, 50%, and 75% indicating low, moderate, and high heterogeneity, respectively. If substantial heterogeneity is detected ($I^2 > 50\%$), we will explore potential sources of heterogeneity through subgroup analyses (e.g., by study design, population characteristics, insomnia measurement method) and sensitivity analyses (e.g., excluding studies with high risk of bias). Publication bias will be assessed using funnel plots and Egger's test if a sufficient number of studies are included in meta-analyses (at least 10).

3.6.2. Optional analysis:

3.6.2.1. Umbrella Review:

If the systematic review demonstrates a large number of previous reviews, a joint analysis of the data can be performed.

4 Dissemination

The findings of this systematic review will be disseminated through:

- **Publication in a peer-reviewed, internationally recognized journal indexed in PUBMED.** We will target journals with a focus on sleep, psychiatry, neurology, or public health.
- **Preprint server deposition.** We will consider posting a preprint of the manuscript on a recognized preprint server (e.g., medRxiv, bioRxiv) to facilitate rapid dissemination of findings.
- **Conference presentations.** We will present the findings at relevant national and international conferences.
- **Lay summaries.** We will prepare lay summaries of the findings for dissemination to patient advocacy groups and the general public.

5 Project Timeline

This project started in November 2024 and will end in July 2025.

6 Data management

Data will be managed according to the author contributions described in item 9. All search records, screened articles, full-text articles, data extraction forms, quality

assessment records, and statistical analysis files will be archived securely by the first author (JFRR) and will be accessible to all co-authors. Data will be stored in compliance with relevant data protection regulations and will be retained for a minimum of [Specify timeframe, e.g., 5 years] after publication.

7 Funding

The authors' resources were used. No external funding has been received for this study.

Protocol references

1. Naghavi, M., *Global, regional, and national burden of suicide mortality 1990 to 2016: systematic analysis for the Global Burden of Disease Study*. 2019, BMJ. **364**: p. 194.
2. Supasitthumrong, T., et al., *Predictors of increased affective symptoms and suicidal ideation during the COVID-19 pandemic: results from a large-scale study of 14 271 Thai adults*. BMJ Ment Health, 2024. **27**(1): p. e300982.
3. Centers for Disease Control and Prevention *Suicide Data and Statistics*. CDC, 2024.
4. Santos, M.C.L., et al., *Suicide in elderly: an epidemiologic study*. Rev Esc Enferm USP, 2021. **55**: p. e03692.
5. Rubatino Rodrigues, J.F., L.P. Rodrigues, and G.M. Araújo Filho, *Increase in suicide rates in the elderly population of the state of São Paulo, Brazil: Could Alzheimer's disease be a risk factor?* Public Health, 2024. **236**: p. 204-6.
6. Page, M.J., et al., *The PRISMA 2020 statement: an updated guideline for reporting systematic reviews*. Syst Rev, 2021. **10**.
7. Wells, G.A., et al., *The Newcastle-Ottawa Scale (NOS) for assessing the quality if nonrandomized studies in meta-analyses*. 2021, The Ottawa Hospital: Ottawa, Canada.