# Programas de prevención del suicidio en personas mayores: revisión sistemática de la evidencia internacional (2013–2025)

## Suicide Prevention Programs for Older Adults: A Systematic Review of International Evidence (2013–2025)

**Tiago Ambrósio Carrasqueira, Pedro Machado dos Santos y Mónica Teixeira (1)**

**(1) Universidade Lusófona de Lisboa (Portugal)**

**Resumen:** El suicidio en las personas mayores constituye un importante problema de salud pública, asociado a factores clínicos, psicológicos y sociales. El objetivo de esta revisión fue identificar programas de prevención del suicidio dirigidos a personas de 60 o más años y sintetizar sus efectos reportados sobre la ideación suicida, los intentos de suicidio y la mortalidad relacionada con el suicidio, considerando de forma secundaria factores de riesgo y protección descritos en los estudios. Se realizó una revisión sistemática siguiendo PRISMA 2020 en Web of Science, Scopus, B-On, SciELO, JSTOR y RCAAP/ReCIL para el periodo 2013–2025. Se identificaron 612 registros y 11 fueron retenidos para la síntesis narrativa. Los resultados muestran efectos favorables sobre la ideación suicida en varias intervenciones psicoterapéuticas, de resiliencia y de atención colaborativa, aunque la evidencia sobre intentos y mortalidad fue escasa. La heterogeneidad metodológica, el seguimiento limitado y la restricción idiomática condicionan la generalización de los hallazgos. Se concluye que la evidencia es prometedora, pero todavía insuficiente para establecer la superioridad de un modelo preventivo específico.

**Palabras clave:** Prevención del suicidio, Personas mayores, Ideación suicida, Programas de intervención, Revisión sistemática.

**Abstract:** Suicide among older adults is a major public health concern associated with clinical, psychological, and social factors. This review aimed to identify suicide prevention programmes targeting people aged 60 years and older and to synthesise their reported effects on suicidal ideation, suicide attempts, and suicide-related mortality, while secondarily considering risk and protective factors reported in the studies. A systematic review following PRISMA 2020 was conducted in Web of Science, Scopus, B-On, SciELO, JSTOR, and RCAAP/ReCIL for the 2013–2025 period. A total of 612 records were identified and 11 were retained for narrative synthesis. Several psychotherapeutic, resilience-focused, and collaborative-care interventions showed favourable effects on suicidal ideation, whereas evidence concerning suicide attempts and mortality was scarce. Methodological heterogeneity, limited follow-up, and language restrictions constrain the generalisability of the findings. The evidence is promising but remains insufficient to establish the superiority of any specific prevention model.

**Keywords:** Suicide prevention, Older adults, Suicidal ideation, Intervention programmes, Systematic review.

Recibido: 06/07/26 Revisado: 24/08/26 Preprint: 25/10/26 Aceptado: 20/03/27 Publicado: 01/07/27

*Referencia normalizada:* Carrasqueira, T.A., Machado dos Santos, P. y Teixeira, M. (2027). Programas de prevención del suicidio en personas mayores: revisión sistemática de la evidencia internacional (2013–2025). *Ehquidad. International Welfare Policies and Social Work Journal*, *28,* 285-000. https://doi.org/10.15257/ehquidad.2027.0020

*Correspondencia:* Tiago Ambrósio Carrasqueira, Universidade Lusófona de Lisboa (Portugal). Correo electrónico: tiagomiguel.carrasqueira@gmail.com

## 1. INTRODUCTION

Population ageing is one of the most significant structural transformations of the 21st century, resulting from the combined effects of increased life expectancy and sustained declines in fertility rates. Globally, the number of people aged 60 years and over is projected to double by 2050, exceeding 2 billion and representing approximately one-fifth of the world's population (United Nations, 2022). In the European Union, people aged 65 years and over represented 21.3% of the population in 2023 (Eurostat, 2024). In Portugal, the corresponding proportion was 23.9% in 2023, illustrating the particularly advanced demographic ageing of the country and the resulting challenges for healthcare, social protection, and public policy (Instituto Nacional de Estatística [INE], 2024).

Suicide is one of the leading causes of preventable mortality worldwide, with an estimated 727,000 deaths in 2021 (World Health Organization [WHO], 2025). Although often associated with adolescence and young adulthood, epidemiological evidence indicates that suicide rates remain particularly concerning in later life, especially among individuals aged 70 years and over, where suicidal behaviour is frequently characterised by higher lethality and lower verbal expression of suicidal ideation (Conwell et al., 2011; DeLeo et al., 2020).

**In older adults, suicide is rarely explained by psychiatric morbidity alone. Depression remains one of the strongest clinical risk factors, but suicidal vulnerability usually emerges from the interaction between mental suffering, disabling physical illnesses, functional decline, social isolation, and the loss of meaningful social roles (Conwell et al., 2011; Fässberg et al., 2012).**

**Historically, suicide has been analysed from multiple theoretical perspectives. Durkheim (2002) highlighted the role of social integration, Joiner (2005) emphasised thwarted belongingness and perceived burdensomeness, and Baumeister (1990) conceptualised suicide in relation to cognitive escape from aversive self-awareness. In later life, suicidal vulnerability may also be shaped by cumulative losses, functional decline, disabling illness, social disconnection, and changes in autonomy and social roles, dimensions consistently identified in research on suicide risk in older adults (Conwell et al., 2011; Fässberg et al., 2012).**

**Despite the extensive body of research on risk factors, there has been less systematic attention devoted to evidence concerning structured prevention programmes specifically designed for older adults. Many preventive strategies are extrapolated from models developed for younger populations, often overlooking the specificities associated with ageing. In Portugal, research has described patterns of suicide in later life (José & Coelho, 2024), but descriptive epidemiological evidence is distinct from evaluative evidence on structured prevention programmes.**

**Accordingly, the primary objective of this systematic review is to identify suicide prevention programmes targeting adults aged 60 years and older and to synthesise their reported effects on suicidal ideation, suicide attempts, and suicide-related mortality. As secondary objectives, the review describes the main characteristics of the interventions, the risk and protective factors reported in the included literature, and the principal methodological limitations relevant to interpretation of the evidence.**

## 2. MATERIALS AND METHODS

The present study took the form of a systematic review of the scientific literature, reported in accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which establish standards of transparency, methodological rigour, and reproducibility in the synthesis of scientific evidence (Page et al., 2021). The adoption of these guidelines enabled the identification, screening, eligibility assessment, and inclusion of studies to be organised in a structured manner.

The review was guided by the following research question: What suicide prevention programmes targeting individuals aged 60 years and over have been described in the scientific literature, and what effects have been reported on suicidal ideation, suicide attempts, or suicide-related mortality? For the purposes of this review, "older adults" was operationally defined as people aged 60 years and over, consistent with the threshold used in previous reviews of late-life suicide prevention (Laflamme et al., 2022; Okolie et al., 2017). The PICO framework (Population, Intervention, Comparison, Outcome) was used to define eligibility: population, adults aged 60 years and over; intervention, structured clinical, psychosocial, institutional, or community-based suicide-prevention programmes; comparison, usual care, no intervention, or pre-post assessment when applicable; and outcomes, suicidal ideation, suicide attempts, or suicide-related mortality. Risk and protective factors were extracted as secondary contextual outcomes when reported by eligible studies.

**Table 1.** PICO Framework: Inclusion Criteria for Primary Sources (Eriksen & Frandsen, 2018)

| P (Population) | I (Intervention) | C (Comparison) | O (Outcome) |
|---|---|---|---|
| Individuals aged 60 years and older | Structured intervention programmes with a direct or indirect impact on suicide prevention | No intervention or standard intervention | Reduction in suicidal ideation, suicide attempts, or suicide mortality |

Source: Own elaboration.

The literature search was conducted in Web of Science, Scopus, B-On, SciELO, JSTOR, and RCAAP/ReCIL between February and March 2026. The original database-specific search histories were no longer available at revision stage. Therefore, to improve transparency without presenting an unverifiable verbatim strategy, the search structure was reconstructed from the descriptors documented in the original manuscript. The reconstructed English-language combination was: ("suicide prevention" OR "suicidal ideation" OR "suicidal behavior") AND ("older adults" OR elderly OR "aged 60 years and over" OR "late-life"). For B-On, SciELO, and RCAAP/ReCIL, the reconstructed Portuguese-language combination was: ("prevenção do suicídio") AND (idosos OR "pessoas idosas") AND intervenção. These combinations reflect the documented descriptors and the use of Boolean operators reported in the original manuscript; database-specific field tags, platform syntax, and the exact historical search strings were not preserved and are therefore not presented as verbatim records.

Eligibility was restricted to publications from 2013 to 2025, written in English or Portuguese. No geographical restriction was applied; the intended scope was international. The language restriction was pragmatic, reflecting the languages in which the reviewer could reliably assess full texts, rather than an assumption about the geographical distribution of the evidence. This decision may have favoured evidence from Anglophone and Lusophone settings and is therefore treated as a limitation.

Studies from Psychology, Psychiatry, Public Health, Social Work, and related health or social-care fields were eligible when they described a structured intervention or prevention strategy relevant to adults aged 60 years and over. Empirical quantitative, qualitative, and mixed-method studies were prioritised for effectiveness synthesis. Reviews, protocols, and studies addressing closely related risk or protective factors were retained only when they contributed contextual information and were not interpreted as equivalent evidence of intervention effectiveness.

The study selection process followed PRISMA 2020. After database identification, records outside the predefined publication period and scientific scope were removed, followed by duplicate removal. Titles and abstracts were screened against the eligibility criteria, and potentially relevant reports underwent full-text assessment. The final narrative synthesis distinguished evidence that directly assessed suicide-related outcomes from contextual evidence addressing mechanisms, risk/protective factors, depressive symptoms, or intervention development. This distinction was used to avoid attributing direct preventive effectiveness to studies that did not measure suicidal ideation, suicide attempts, or suicide-related mortality.

**Table 2.** Steps for the Identification of Eligible Articles

| Step 1 | Step 2 | Step 3 |
|---|---|---|
| Screening of the titles of articles identified in the databases and exclusion of those that did not meet the inclusion criteria defined according to the PICO framework | Screening of the abstracts of the studies selected in the previous stage, with exclusion of those that did not address structured suicide prevention programmes targeting individuals aged 60 years and older. | Full-text review of the remaining studies and final selection of those that met all the predefined inclusion criteria. |

Source: Own elaboration.

Study selection and extraction were conducted by one reviewer using the predefined criteria. Methodological appraisal was design-specific and was guided by the Mixed Methods Appraisal Tool (MMAT, 2018) for empirical qualitative, randomised, and non-randomised studies (Hong et al., 2018), and by AMSTAR 2 for the included review of reviews (Shea et al., 2017). Given the heterogeneity of designs and evidential roles, no overall numerical quality score was calculated. Appraisal focused on design-appropriate domains such as sampling and comparability, outcome measurement, completeness of data, potential confounding or selection bias, and coherence between methods and findings; the principal study-level limitations are summarised in Table 3. The study protocol was not appraised for intervention effectiveness because outcome data were not yet available. Methodological appraisal informed interpretation rather than functioning as an automatic exclusion criterion. The use of a single reviewer for screening, extraction, and appraisal remains a potential source of selection and assessment bias.

## 3. RESULTS

The database searches initially identified 612 records. Before title and abstract screening, 148 records were removed because they fell outside the 2013–2025 publication period, 97 because they were outside the predefined disciplinary scope, and 86 as duplicates. This left 281 records for title and abstract screening.

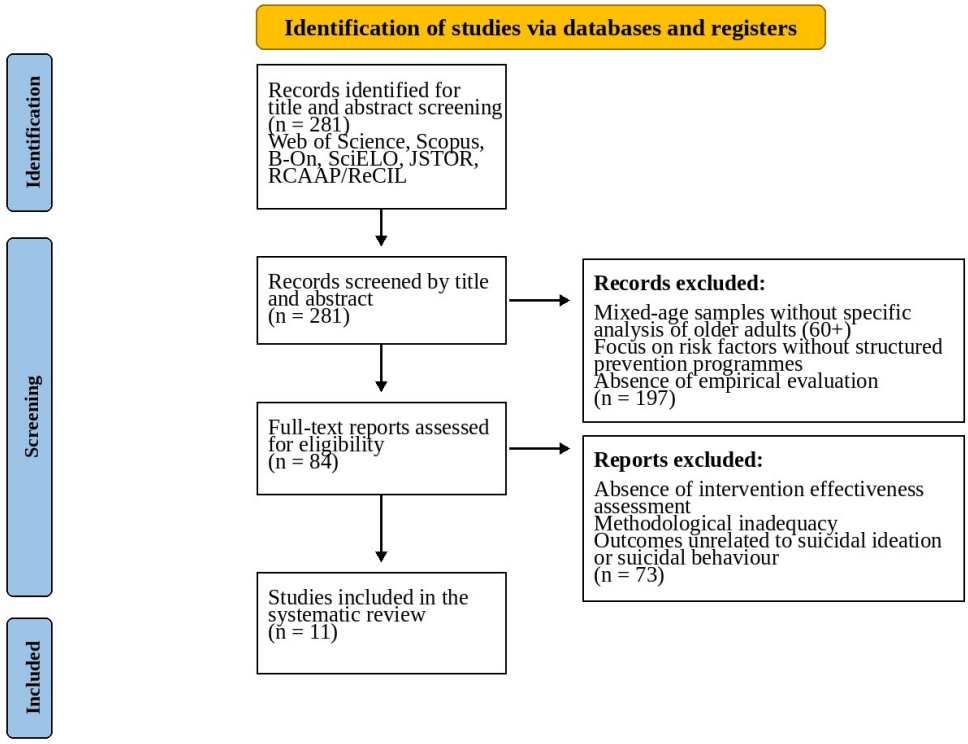
Of the 281 records screened by title and abstract, 197 were excluded because they did not meet the eligibility criteria, most commonly because they included mixed-age samples without a specific analysis of older adults, focused on risk factors without a structured preventive component, or did not provide an empirical or clearly defined prevention strategy relevant to suicidal behaviour.

Full texts were assessed for 84 reports. Seventy-three were excluded because they did not evaluate or adequately describe an eligible preventive intervention, did not report outcomes relevant to suicidal ideation or suicidal behaviour, or did not fit the methodological scope of the review. Eleven records were retained for narrative synthesis. Because the final corpus

**included heterogeneous evidence, direct effectiveness conclusions were based primarily on studies measuring suicide-related outcomes, while protocols, reviews, and indirect studies were used only to contextualise intervention mechanisms and research gaps.**

**The final narrative synthesis therefore comprised 11 records, with different evidential roles. This distinction is important when interpreting the findings: studies directly assessing suicidal ideation or suicidal behaviour provide stronger evidence for preventive effects than studies focused on depression, psychosocial mechanisms, or intervention development.**

**Figure 1.** Flow diagram of study selection according to PRISMA 2020 (Page et al., 2021)




Source: Own elaboration.

**The 11 retained records were conducted or developed in several geographical contexts, including the United States, Brazil, France, Sweden, China, and Israel, together with one review of reviews with an international scope. This distribution describes only the studies identified under the present search strategy and should not be interpreted as the geographical distribution of all available evidence. In particular, the English- and Portuguese-language restriction and the selected databases may have shaped the countries represented in the final corpus.**

**Methodologically, the corpus included randomised and quasi-experimental studies, secondary analyses of clinical trials, qualitative research, one systematic review of reviews, and one trial protocol. This heterogeneity broadened the description of intervention models but limits direct comparison of effectiveness. Small samples, short follow-up periods, indirect outcomes, and the inclusion of evidence that did not directly measure suicidal behaviour were recurrent methodological constraints.**

**Four thematic groups were identified: (1) psychotherapeutic interventions, including PROTECT, Problem-Solving Therapy, Social Engage Psychotherapy, and the ASSIP-OA adaptation described by Hed et al. (2025); (2) institutional interventions, such as gatekeeper training and resilience-focused programmes in residential settings; (3) digital and low-intensity approaches aimed primarily at depressive symptoms; and (4) studies examining modifiable psychosocial mechanisms associated with suicide risk, including loneliness, hopelessness, perceived burdensomeness, low self-efficacy, trauma, and social disconnection. The latter two groups were interpreted as contextual rather than direct evidence of suicide-prevention effectiveness when suicide-related outcomes were not measured.**

**Across the included literature, the most consistently reported modifiable risk factors were depressive symptoms, hopelessness, loneliness or social disconnection, low self-efficacy, trauma-related isolation, and experiences of abuse or dependency. Protective dimensions included resilience, social connectedness, problem-solving skills, perceived support, and access to**

**coordinated professional care. These factors were treated as mechanisms or contextual variables rather than as substitutes for suicide-related outcomes.**

**Quantitative findings varied across interventions. In PROTECT, suicidal ideation was reported by 19% of participants at baseline and 5.7% at the end of treatment, alongside mean PHQ-9 improvements of 5.58 points among participants with suicidal ideation and 5.25 points among those without it (Rollandi et al., 2025). In the resilience trial, 68 nursing-home residents were randomised and the intervention produced a significant group-by-time effect for suicidal ideation ($\chi^2 = 12.564$, $p = .002$) (Zhang et al., 2022). In the Problem-Solving Therapy trial, 221 older adults were analysed; improvement in suicidal ideation at 12 weeks was 60.4% with Problem-Solving Therapy versus 44.6% with supportive therapy ($p = .031$) (Gustavson et al., 2016). Social Engage was tested in 62 participants and improved depressive symptoms and social-emotional quality of life, but did not demonstrate clear preliminary effects on its proposed interpersonal mechanisms (Van Orden et al., 2021). The review of reviews by Laflamme et al. (2022) reported a protective effect of collaborative care on attempts/ideation (OR = 0.80, 95% CI 0.68–0.94), while findings for antidepressants were inconsistent. These data illustrate promising effects on suicidal ideation but do not support pooled estimation because of substantial clinical and methodological heterogeneity.**

**With regard to the outcomes specified in the research question, suicidal ideation was the most frequently evaluated suicide-related outcome. Evidence concerning suicide attempts was limited and was derived mainly from broader reviews rather than from the primary intervention studies in the present corpus. No included primary intervention study provided a robust estimate of effect on suicide mortality. Consequently, the review can support conclusions regarding suicidal ideation more strongly than conclusions regarding attempts or mortality.**

**Table 3.** Summary of the Articles Included in the Systematic Literature Review

| Author/Year | Title | Population/Country | Design | Programme / focus | Key findings and main limitation |
|---|---|---|---|---|---|
| Rollandi et al. 2025 | Reducing Depression and Suicidal Ideation Among Elder Abuse Victims Using PROTECT | 158 depressed older victims of elder abuse / USA | Longitudinal intervention study | PROTECT; 10-week behavioural psychotherapy | SI: 19% at baseline to 5.7% post-treatment; PHQ-9 improved. No control group; SI measured with PHQ-9 item 9. |
| Chauliac et al. 2016 | How does gatekeeper training improve suicide prevention for elderly people in nursing homes? | Residents and staff in 24 nursing homes / France | Controlled quasi-experimental study | Gatekeeper training in residential care | Improved staff preparedness and risk-management practices. Institutional/process outcomes predominated over direct suicidal outcomes. |
| Zhang et al. 2022 | Effectiveness of a resilience-targeted intervention based on "I have, I am, I can" strategy | 68 nursing-home residents with SI / China | Randomised controlled trial | 8-week resilience intervention | Significant improvement in SI ($\chi^2$=12.564, p=.002) and depression. Small sample and short follow-up. |
| Laflamme et al. 2022 | Prevention of suicidal behavior in older people: A systematic review of reviews | Adults ≥60 / International | Systematic review of reviews | Pharmacological and behavioural interventions | Collaborative care reduced attempts/ideation (OR=.80, 95% CI .68–.94); antidepressant evidence inconsistent. Secondary evidence and heterogeneous interventions. |
| Van Orden et al. 2021 | A Pilot Randomized Trial of Engage Psychotherapy to Increase Social Connection and Reduce Suicide Risk in Later Life | 62 adults ≥60 with loneliness/burdensomeness / USA | Pilot randomised trial | Social Engage psychotherapy | Improved depression and social-emotional quality of life; no clear effect on proposed interpersonal mechanisms. Pilot sample. |
| Gustavson et al. 2016 | Problem-Solving Therapy Reduces Suicidal Ideation in Depressed Older Adults with Executive Dysfunction | 221 adults ≥65 with major depression and executive dysfunction / USA | Secondary analysis of RCT | Problem-Solving Therapy | SI improvement at 12 weeks: 60.4% PST vs 44.6% supportive therapy (p=.031). Secondary analysis. |
| Hed et al. 2025 | Attempted suicide short intervention program for older adults 65+ (ASSIP-OA) | Adults ≥65 after attempt or severe suicidal plans / Sweden | Multicentre RCT protocol | ASSIP-OA adaptation | Describes age-adapted protocol; no outcome data available, therefore no effectiveness conclusion. |
| Alexopoulos et al. 2021 | Modifiable predictors of suicidal ideation during psychotherapy for late-life major depression | Older adults with major depression / USA | Secondary analysis using machine learning | Modifiable predictors during psychotherapy | Identified distinct SI trajectories and modifiable predictors such as hopelessness and low self-efficacy. Not a standalone prevention-programme trial. |

| Author/Year | Title | Population/Country | Design | Programme / focus | Key findings and main limitation |
|---|---|---|---|---|---|
| Stein & Tuval-Mashiach 2015 | Loneliness and Isolation in Life-Stories of Israeli Veterans of Combat and Captivity | Veterans/former prisoners of war / Israel | Qualitative study | Trauma-related loneliness | Experiential isolation emerged as clinically relevant. Contextual evidence; no preventive intervention or suicide outcome. |
| Scazufca et al. 2024 | Self-help mobile messaging intervention for depression among older adults in resource-limited settings | Older adults with depressive symptoms / Brazil | Randomised controlled trial | Mobile self-help messaging | Short-term improvement in depressive symptoms. Depression-focused study; direct suicidal outcomes were not primary endpoints. |
| Nakamura et al. 2024 | A self-help mobile messaging intervention to improve subthreshold depressive symptoms (PRODIGITAL) | Older adults with subthreshold depression / Brazil | Pragmatic randomised trial | WhatsApp self-help intervention | No significant improvement in subthreshold depressive symptoms versus control. Indirect relevance to suicide prevention. |

Source: Own elaboration.

## 4. DISCUSSION OF RESULTS

The main finding of this review is that the strongest and most consistent signal mortality. This pattern is clinically relevant but also exposes an important limitation of the evidence base: many studies rely on proximal outcomes, such as ideation, depressive symptoms, or psychosocial risk factors, because suicide attempts and deaths are comparatively infrequent and require larger samples and longer follow-up. The present results should therefore be interpreted as evidence of potential preventive benefit, not as proof that the interventions reduce suicide mortality.

The favourable findings for structured psychotherapeutic approaches are consistent with earlier evidence not included in the 2013–2025 primary search window. The PROSPECT trial demonstrated that collaborative depression care in primary care could reduce suicidal ideation among depressed older adults (Bruce et al., 2004). Similarly, the review by Okolie et al. (2017) concluded that multifaceted and depression-focused interventions showed the most consistent evidence for reducing suicidal ideation in later life. Against this background, the reductions observed in PROTECT (Rollandi

**et al., 2025), Problem-Solving Therapy (Gustavson et al., 2016), and resilience training (Zhang et al., 2022) support the value of interventions that combine symptom management with concrete coping, problem-solving, or protective-resource enhancement.**

**The quantitative results also suggest that effect sizes and certainty vary substantially across programmes. PROTECT showed a marked reduction in the proportion of participants reporting suicidal ideation, but the absence of a concurrent control group limits causal inference. By contrast, Zhang et al. (2022) used random allocation and demonstrated a significant group-by-time effect, although the small sample and one-month follow-up constrain conclusions about durability. Gustavson et al. (2016) provided a larger sample and longer follow-up, but the suicidal-ideation analysis was secondary to the parent trial. These design differences help explain why a pooled effect estimate would not be methodologically appropriate.**

**Social and interpersonal mechanisms remain important, but the evidence is more nuanced than a purely descriptive reading might suggest. Social Engage was feasible and associated with improvements in depression and social-emotional quality of life, yet it did not show preliminary effects on the hypothesised mechanisms of belongingness and perceived burdensomeness (Van Orden et al., 2021). Thus, social connectedness remains a plausible prevention target, but the mechanism by which psychotherapy reduces risk cannot be assumed. A recent systematic review of psychosocial protective factors in adults aged 60 years and older found particularly consistent inverse associations between suicidality and purpose in life, resilience, and positive relationships (Ki et al., 2024), supporting the relevance of protective factors while not establishing that modifying them will necessarily reduce suicide attempts or mortality. The qualitative findings of Stein and Tuval-Mashiach (2015) are useful in this respect as contextual evidence on experiential isolation, although they should not be interpreted as evidence of intervention effectiveness.**

**Institutional approaches operate at a different level. The gatekeeper model evaluated by Chauliac et al. (2016) aims to improve recognition, referral, and crisis management rather than directly change suicidal ideation through psychotherapy. This distinction matters when comparing programmes: improvements in professional preparedness or organisational response are implementation outcomes, whereas changes in ideation, attempts, or mortality are patient outcomes. Both may be relevant to prevention, but they answer different questions and should not be treated as interchangeable indicators of effectiveness.**

**The digital studies illustrate another boundary of the evidence. Scazufca et al. (2024) and Nakamura et al. (2024) tested scalable interventions for depressive symptoms in socioeconomically disadvantaged older adults. Their relevance to suicide prevention is indirect because suicidal behaviour was not the primary endpoint.**

**These studies are therefore better interpreted as evidence about potentially modifiable clinical risk factors and service-delivery models than as direct demonstrations of suicide-prevention efficacy. This distinction was made explicit in the revised synthesis to avoid overstating the findings.**

**The review of reviews by Laflamme et al. (2022) provides a useful external benchmark within the included corpus. It found that collaborative care was associated with fewer attempts or suicidal ideation, whereas evidence for antidepressants was inconsistent. This reinforces the broader pattern identified here: integrated care and psychosocial interventions appear promising, but certainty varies by intervention type and outcome. It also shows why mortality should be discussed separately from ideation; evidence concerning death by suicide remains particularly sparse and statistically difficult to evaluate.**

**From a gerontological perspective, the findings support the need to consider heterogeneity among older adults. Abuse, institutionalisation, depression, executive dysfunction, trauma, loneliness, functional decline, and socioeconomic disadvantage represent different pathways to vulnerability. Programmes that are flexible enough to address these pathways may be more acceptable and clinically relevant than one-size-fits-all approaches. However, the present evidence does not permit a conclusion that multidimensional programmes are categorically "more effective" than simpler interventions; it only indicates that several promising programmes incorporate psychological, social, or organisational components.**

**The methodological appraisal also tempers the strength of the conclusions. Recurrent concerns include small or selected samples, short follow-up periods, reliance on suicidal ideation as a proxy for more severe outcomes, secondary analyses, and substantial heterogeneity in intervention content and measurement. In addition, one included record was a protocol without outcome data and several records contributed contextual rather than direct effectiveness evidence. These features reduce comparability and require cautious interpretation of claims about programme effectiveness.**
**The relatively small final corpus should be interpreted in light of the review question and eligibility rules. The search initially retrieved a broad literature, but most records concerned risk factors, mixed-age populations, or mental-health outcomes without a structured older-adult suicide-prevention component. Rather than treating the low number of included records as evidence that few studies exist globally, the revised manuscript frames it as the number identified under the chosen databases, languages, period, and operational criteria. This distinction is particularly important because additional evidence may exist in other languages, databases, grey literature, or earlier publication periods.**

**The findings nevertheless point to several priorities for future research: adequately powered trials with longer follow-up; explicit measurement of suicide attempts and, where feasible, mortality; clearer reporting of intervention components and implementation conditions; and evaluation**

**across different health and social-care systems. Studies should also examine which components work for which subgroups of older adults, rather than assuming that chronological age alone defines a homogeneous target population.**

**For clinical and social intervention, the most defensible implication is therefore not the selection of a single superior programme, but the need for structured assessment and coordinated responses that address both suicide-specific indicators and modifiable clinical or psychosocial factors. Interventions aimed at depression, hopelessness, social disconnection, abuse, problem-solving difficulties, or institutional detection may contribute to prevention when they are embedded in pathways that ensure risk assessment, referral, continuity of care, and follow-up.**

**Taken together, the reviewed evidence supports cautious optimism regarding psychotherapeutic, resilience-focused, collaborative, and institutional approaches. The evidence is strongest for changes in suicidal ideation, weaker for suicide attempts, and insufficient for conclusions about mortality. This hierarchy of evidence is now reflected consistently in the objective, review question, results, discussion, and conclusions.**
**The contribution of this review lies in integrating heterogeneous intervention models while explicitly separating direct suicide-related outcomes from indirect clinical or psychosocial outcomes. This distinction clarifies the current state of evidence and identifies methodological priorities for subsequent research in gerontology, mental health, and suicide prevention.**

## 5. LIMITATIONS

**This review has several limitations. First, searches were restricted to English- and Portuguese-language publications and to a defined set of databases, which may have produced geographical and publication bias and means that the countries represented in the final corpus cannot be interpreted as the full distribution of available evidence. Grey literature was not systematically searched. Second, the 2013–2025 period may have excluded earlier influential intervention trials. Third, the heterogeneity of designs, populations,**

**interventions, and outcomes precluded meta-analysis and limited direct comparison between programmes. Fourth, some retained records contributed contextual rather than direct effectiveness evidence, including studies focused on depressive symptoms or psychosocial mechanisms and a protocol without outcome data. Finally, screening, extraction, and appraisal were conducted by a single reviewer, increasing the risk of selection and assessment bias.**

## 6. CONCLUSION

**This systematic review identified 11 records relevant to suicide-prevention programmes and related intervention evidence for adults aged 60 years and over. The strongest findings concern suicidal ideation: several psychotherapeutic, resilience-focused, and collaborative approaches reported favourable changes, although the methodological strength and durability of these effects varied across studies.**

**The evidence was substantially more limited for suicide attempts and especially for suicide-related mortality. Consequently, the review does not support conclusions that any intervention model reduces mortality, nor does it establish the superiority of one programme over another. Studies addressing depressive symptoms, loneliness, trauma, low self-efficacy, social disconnection, or digital delivery contribute useful information about modifiable mechanisms and service models, but these outcomes should not be treated as equivalent to direct suicide-prevention effects.**

**The synthesis nevertheless identifies clinically relevant intervention targets. Problem-solving skills, resilience, coordinated depression care, professional gatekeeper capacity, and social connection may form useful components of prevention strategies for older adults, particularly when linked to systematic identification of suicide risk and continuity of care. Their implementation should be adapted to the older person's clinical, functional, social, and institutional context.**

Interpretation must remain cautious because the corpus is methodologically heterogeneous, several studies have small samples or short follow-up, and the review itself is affected by language, database, temporal, and single-reviewer limitations. The absence of an eligible study from a particular country, including Portugal, cannot be interpreted as proof that no relevant research exists there; it only indicates that no such study was identified under the present search strategy and criteria.

Future research should prioritise adequately powered evaluations that report suicidal ideation, suicide attempts, and mortality separately, include longer follow-up, describe intervention components transparently, and assess implementation across diverse sociocultural and health-system contexts. These improvements are necessary to determine not only whether programmes are promising, but for whom, under what conditions, and with what degree of sustained preventive effect.

Overall, the evidence supports continued development and evaluation of age-sensitive suicide-prevention strategies for older adults, while underscoring that current conclusions are more robust for suicidal ideation than for attempts or mortality.

## 7. CONTRIBUTIONS´ AUTHORS

Conceptualization (TAC, PMDS, and MT); Data curation (TAC, PMDS, and MT)); Formal analysis (TAC, PMDS, and MT)); Funding acquisition (TAC, PMDS, and MT)); Investigation (TAC, PMDS, and MT)); Methodology (TAC, PMDS, and MT)); Project administration (TAC, PMDS, and MT)); Resources (TAC, PMDS, and MT)); Software (TAC, PMDS, and MT)); Supervision (TAC, PMDS, and MT)); Validation (TAC, PMDS, and MT); Visualization (TAC, PMDS, and MT)); Writing—original draft (TAC, PMDS, and MT)); Writing—review and editing (TAC, PMDS, and MT)). The contribution percentages are: TAG (%), PNDS (%), and MT (%). All authors have read and approved the final manuscript.

## 8. REFERENCES

**Alexopoulos, G. S., Raue, P. J., Banerjee, S., Mauer, E., Marino, P., Soliman, M., Kanellopoulos, D., Solomonov, N., Adeagbo, A., Sirey, J. A., Hull, T. D., Kiosses, D. N. & Areán, P. A. (2021). Modifiable predictors of suicidal ideation during psychotherapy for late-life major depression: A machine learning approach. *Translational Psychiatry*, *11*, 536. https://doi.org/10.1038/s41398-021-01656-5**

**Baumeister, R. F. (1990). Suicide as escape from self. *Psychological Review, 97*(1), 90–113. https://doi.org/10.1037/0033-295X.97.1.90**

**Bruce, M. L., Ten Have, T. R., Reynolds, C. F., III, Katz, I. I., Schulberg, H. C., Mulsant, B. H., Brown, G. K., McAvay, G. J., Pearson, J. L. & Alexopoulos, G. S. (2004). Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: A randomized controlled trial. *JAMA, 291*(9), 1081–1091. https://doi.org/10.1001/jama.291.9.1081**

**Chauliac, N., Brochard, N., Payet, C., Margue, Y., Bordin, P., Depraz, P., Dumont, A., Kroupa, E., Pacaut-Troncin, M., Polo, P., Straub, S., Boissin, J., Burtin, C., Montoya, G., Rivière, A., Didier, C., Fournel, C., Durand, C., Barrellon, M. & Terra, J.-L. (2016). How does gatekeeper training improve suicide prevention for elderly people in nursing homes? A controlled study in 24 centres. *European Psychiatry, 37*, 56–62. https://doi.org/10.1016/j.eurpsy.2016.05.011**

**Conwell, Y., Van Orden, K. & Caine, E. D. (2011). Suicide in older adults. *The Psychiatric Clinics of North America, 34*(2), 451–468. https://doi.org/10.1016/ j.psc.2011.02.002**

**DeLeo, D., Draper, B. M., Snowdon, J. & Kõlves, K. (2020). Suicides in older adults: A case-control psychological autopsy study in Australia. *Journal of Psychiatric Research, 120*, 89–96. https://doi.org/10.1016/j.jpsychires.2019.10.013**

**Durkheim, É. (2002). *O suicídio*. Editorial Presença. (Original work published 1897)**

**Eriksen, M. B. & Frandsen, T. F. (2018). The impact of PICO as a search strategy tool on literature search quality: A systematic review. *Journal of the Medical Library Association, 106*(4), 420–431. https://doi.org/10.5195/jmla.2018.345**

Eurostat. (2024). *Demography of Europe – 2024 edition*. European Commission. https://ec.europa.eu/eurostat/web/interactive-publications/demo graphy-2024

Fässberg, M. M., Van Orden, K. A., Duberstein, P., Erlangsen, A., Lapierre, S., Bodner, E., ... & Waern, M. (2012). A systematic review of social factors and suicidal behavior in older adulthood. *International Journal of Environmental Research and Public Health, 9*(3), 722–745. https://doi.org/10.3390/ijerph9030722

Gustavson, K. A., Alexopoulos, G. S., Niu, G. C., McCulloch, C., Meade, T. & Areán, P. A. (2016). Problem-solving therapy reduces suicidal ideation in depressed older adults with executive dysfunction. *The American Journal of Geriatric Psychiatry, 24*(1), 11–17. https://doi.org/10.1016/j.jagp.2015.07.010

Hed, S., Berg, A. I., Tillfors, M., Ehnvall, A., Westrin, Å., Wiktorsson, S., Gysin-Maillart, A., & Waern, M. (2025). Attempted suicide short intervention program for older adults 65+ (ASSIP-OA): A study protocol for a multicentre randomised controlled trial. *BMC Psychiatry, 25*, 588. https://doi.org/10.1186/s12888-025-07016-7

Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., Vedel, I. & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information, 34*(4), 285–291. https://doi.org/10.3233/EFI-180221

Instituto Nacional de Estatística. (2024). *Estatísticas demográficas – 2023*. Instituto Nacional de Estatística. https://www.ine.pt

Joiner, T. (2005). *Why people die by suicide*. Harvard University Press.

José, J. D. S. & Coelho, P. (2024). O suicídio na velhice em Portugal: da confirmação de padrões já conhecidos à revelação de novos padrões. *Forum Sociológico, 44*, 13–23. https://doi.org/10.4000/11xiz

Ki, M., Lapierre, S., Gim, B., Hwang, M., Kang, M., Dargis, L., Jung, M., Koh, E. J. & Mishara, B. (2024). A systematic review of psychosocial protective factors against suicide and suicidality among older adults. *International Psychogeriatrics, 36*(5), 346–370. https://doi.org/10.1017/S1041610223 00443X

**Laflamme, L., Vaez, M., Lundin, K. & Sengoelge, M. (2022). Prevention of suicidal behavior in older people: A systematic review of reviews. *PLOS ONE, 17*(1), e0262889. https://doi.org/10.1371/journal.pone.0262889**

**Nakamura, C. A., Seward, N., Peters, T. J., Nadaleto Didone, T. V., Moretti, F. A., Oliveira da Costa, M., Queiroz de Souza, C. H., Macias de Oliveira, G., Souza dos Santos, M., Aragoni Pereira, L., Mendes de Sá Martins, M., van de Ven, P., Hollingworth, W., Araya, R. & Scazufca, M. (2024). A self-help mobile messaging intervention to improve subthreshold depressive symptoms among older adults in a socioeconomically deprived region of Brazil (PRODIGITAL): A pragmatic, two-arm randomised controlled trial. *The Lancet Regional Health – Americas, 39*, 100897. https://doi.org/10.1016/j.lana.2024.100897**

**Okolie, C., Dennis, M., Thomas, E. S. & John, A. (2017). A systematic review of interventions to prevent suicidal behaviors and reduce suicidal ideation in older people. *International Psychogeriatrics, 29*(11), 1801–1824. https://doi.org/10.1017/S1041610217001430**

**Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S. & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71**

**Rollandi, I., Carter, E., Banerjee, S., Culver, C., Solomonov, N. & Sirey, J. A. (2025). Reducing depression and suicidal ideation among elder abuse victims using PROTECT. *The American Journal of Geriatric Psychiatry, 33*(6), 689–701. https://doi.org/10.1016/j.jagp.2024.11.018**

**Scazufca, M., Nakamura, C. A., Seward, N., Didone, T. V. N., Moretti, F. A., Costa, M. O., Queiroz de Souza, C. H., de Oliveira, G. M., Souza dos Santos, M., Aragoni Pereira, L., de Sá Martins, M. M., van de Ven, P., Hollingworth, W., Peters, T. J. & Araya, R. (2024). Self-help mobile messaging intervention for depression among older adults in resource-limited settings: A randomized controlled trial. *Nature Medicine, 30*(4), 1127–1133. https://doi.org/10.1038/s41591-024-02864-4**

**Shea, B. J., Reeves, B. C., Wells, G., Thuku, M., Hamel, C., Moran, J., Moher, D., Tugwell, P., Welch, V., Kristjansson, E. & Henry, D. A. (2017). AMSTAR 2: A critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ, 358*, j4008. https://doi.org/10.1136/bmj.j4008**

**Stein, J. Y. & Tuval-Mashiach, R. (2015). Loneliness and isolation in life-stories of Israeli veterans of combat and captivity. *Psychological Trauma: Theory, Research, Practice, & Policy, 7*(2), 122–130. https://doi.org/10.1037/a0036936**

**United Nations, Department of Economic and Social Affairs, Population Division. (2022). *World population prospects 2022: Summary of results*. United Nations. https://desapublications.un.org/publications/world-population-prospects-2022-summary-results**

**Van Orden, K. A., Areán, P. A. & Conwell, Y. (2021). A pilot randomized trial of Engage Psychotherapy to increase social connection and reduce suicide risk in later life. *The American Journal of Geriatric Psychiatry, 29*(8), 789–800. https://doi.org/10.1016/j.jagp.2021.03.009**

**World Health Organization. (2025). *Suicide worldwide in 2021: Global health estimates*. https://www.who.int/publications/i/item/9789240110069**

**Zhang, D., Tian, Y., Wang, R., Wang, L., Wang, P. & Su, Y. (2022). Effectiveness of a resilience-targeted intervention based on "I have, I am, I can" strategy on nursing home older adults' suicidal ideation: A randomized controlled trial. *Journal of Affective Disorders, 308*, 172–180. https://doi.org/10.1016/j.jad.2022.04.046**