SYSTEMATIC REVIEW

NursingOpen Open Access WILEY

Interventions of choice for the prevention and treatment of suicidal behaviours: An umbrella review

Teresa Sufrate-Sorzano[1,2] | Iván Santolalla-Arnedo[1,2] |
María Elena Garrote-Cámara[1] | Beatriz Angulo-Nalda[3] | Ruth Cotelo-Sáenz[4] |
Roland Pastells-Peiró[5,6,7] | Filip Bellon[8,9] | Joan Blanco-Blanco[7,8,9] |
Raúl Juárez-Vela[1,2] | Fidel Molina-Luque[10,11,12]

[1]Reserch Unit on Integrated Health Care (INCUiSA), Biomedical Research Center of La Rioja (CIBIR), Logroño, Spain

[2]Department of Nursing, GRUPAC, University of La Rioja, Logroño, La Rioja, Spain

[3]Rioja Health Service, Coordinator Saint Peter's Hospital, Logroño, La Rioja, Spain

[4]Rioja Health Service, Primary Care Coordination, Logroño, La Rioja, Spain

[5]Department of Nursing and Physiotherapy. Faculty of Nursing and Physiotherapy, University of Lleida. Healthcare Group (GRECS), Lleida, Spain

[6]Institute of Biomedical Research in Lleida (IRBLleida), Lleida, Spain

[7]Group for the Study of Society Health Education and Culture (GESEC), Lleida, Spain

[8]Faculty of Nursing and Physiotherapy, University of Lleida, Lleida, Spain

[9]Health Care Research Group (GRECS) Biomedical Research Institute of Lleida, IRBLleida, Lleida, Spain

[10]Faculty of Education, Psychology and Social Work, University of Lleida, Spain

[11]Group for the Study of Society, Health, Education and Culture (GESEC), University of Lleida, Lleida, Spain

[12]Research Institute in Social and Territorial Development (INDEST), University of Lleida, Lleida, Spain

Correspondence
Iván Santolalla-Arnedo, Research Unit on Health System Sustainability (GISSOS), Biomedical Research Center of La Rioja (CIBIR) Logroño, Spain., Avenida de la Paz nº 88. 26004. Logroño, La Rioja. Spain.
Email: ivsantol@unirioja.es

Abstract

Aim: This umbrella review aims to determine which interventions can be considered as effective in the prevention and treatment of suicidal behaviour.

Design: Umbrella review.

Methods: A systematic search was conducted of works indexed in the PubMed, CINAHL, Cochrane Database of Systematic Reviews, Scopus, ISI Web of Knowledge and Joanna Institute Briggs databases. The search covered works published from 2011 to 2020.

Results: The scientific literature shows that, in addition to being the most prevalent interventions in use, dialectical and cognitive behavioural therapies are the most effective in the treatment and management of suicide attempts and suicidal ideation. It is shown that the prevention and treatment of suicidal behaviour requires multidisciplinary and comprehensive management. Among the interventions that stand out the most are the promotion of providing coping tools, work based on thought and behaviour, and behavioural, psychoanalytic and psychodynamic therapies for the management of emotions.

1 | INTRODUCTION

Within the multidisciplinary framework that encompasses the act of suicide—and with specific regard to the factors that may positively or negatively influence the development of suicidal behaviour—protective factors, predisposing factors and risk factors can be described. Protective factors are those that provide the strength to overcome problems and thus to continue with life. Predisposing factors are considered as drivers of suicidal behaviour and risk factors increasing the likelihood of progressing to suicide (Campo-Arias & Suárez-Colorado, 2019). Consequently, professionals should focus their actions on promoting life-sustaining components, such as limiting access to lethal tools or improving access to health systems (Anseán, 2014), in addition to training in the recognition of risk factors, including previous suicide attempts or the presence of a mental illness (World Health Organization, 2014) and reducing the impact of those which could act as predisposing factors (Oliván et al., 2021). Suicide is now a public health problem; therefore, professional and community intervention must be a global priority of health and political programmes (World Health Organization, 2014). An estimate by the same organisation puts the number of people who die by suicide at 700,000 per year, while each of these lethal events is accompanied by twenty attempts (World Health Organization, 2021a, 2021b). From these figures, it can be inferred that there are more than 16-million suicide attempts in the world each year and a previous suicide attempt has been determined to be the most relevant individual risk factor (World Health Organization, 2018).

Milner et al. (2015) reviewed 12 articles and concluded that brief professional–patient contact interventions successfully reduced the frequency of repeated self-harm; the effectiveness of telephone and letter contact was studied. Research focusing on new technologies available as follow-up tools determined their statistically significant effectiveness in the preventive field (Larsen et al., 2016). In addition, such mobile technology reduces depression, anxiety and self-harm, improving coping strategies (Melia et al., 2020).

In 2017, a manuscript in which the authors analysed 78 reviews concluded that brief contact intervention, as indicated by the World Health Organization (WHO), was competent and effective in the prevention of suicidal behaviour; telephone contact interventions, group therapies, education, management and treatment with lithium and counselling, and cognitive behavioural therapy also reduced deaths from suicide (Riblet et al., 2017). Cognitive behavioural therapy has been identified to be more effective than traditional treatments in reducing the risk of new suicide attempts (Gøtzsche & Gøtzsche, 2017; Lai et al., 2014). Considering multilevel intervention, several studies have indicated the effectiveness of cognitive behavioural therapy, individual and group support, brief contact, counselling, support groups led by well-trained health professionals, early detection of risk symptoms, improved access to the health care system, community education and awareness, mental health promotion, stress management and coping support (Hofstra et al., 2020; Lai et al., 2014).

In 2020, a systematic review identified that dialectical behavioural therapy, cognitive behavioural therapy, health education, contact and follow-up and gatekeepers were effective tools for the treatment and prevention of suicidal behaviour and the prevention of both completed suicide and suicide attempts (Hofstra et al., 2020).

The most recent work focusing on intervention in suicidal behaviour highlighted the validity of interventions at different levels, statistically significantly reducing ideation and behaviour repetition (Briggs et al., 2019; Büscher et al., 2020; Gøtzsche & Gøtzsche, 2017; Larsen et al., 2016; Melia et al., 2020).

Despite the current scientific basis, it is not known whether there is proven efficacy in any specific intervention compared to others or whether there is a gender perspective in the study of suicidal behaviour due to the different epidemiological distribution. Specifically concerning to gender, one review reflected greater effectiveness of recognition and treatment of depression in women (Lapierre et al., 2011).

Another question is whether there are differences in the effectiveness of interventions that focus on addressing suicidal behaviour compared to interventions that address the symptomatology that may accompany it, such as hopelessness.

In Spain, the first national document focusing on the treatment and prevention of suicidal behaviour was published in 2011 (Grupo de Trabajo de la Guía de Práctica Clínica de Prevención y Tratamiento de la Conducta Suicida, 2011), which represented a breakthrough in nursing intervention by reducing the variability of healthcare. Specifically, in La Rioja, the II Health Plan in force in 2011 strongly recommends the development of strategies for suicide prevention (Ministry of Health, 2009). In the same year, the European Commission formally urged EU Member States to prioritise suicide prevention strategies in their health policies (Scheftlein, 2011). At the same time, PAHO and WHO published a guideline protocolising the intervention and assessment of patients with suicidal behaviour and mental, neurological or substance use disorders (World Health Organization, 2011). At the international level, the 66th World Health Assembly adopted the WHO Comprehensive Mental Health Action Plan 2013–2020, whose main objectives included reducing the suicide rate by 10% by 2020 (World Health Organization, 2013). In addition, this work could be useful for evaluating the national plan for addressing suicidal behaviour in Spain, which was due to end in 2020. This fact,

which coincided in time with the designation of 2020 as the international year of the nursing and midwifery profession, established the deadlines for the search for reviews, with the aim of subsequently presenting the results to the community and emphasising the work of the nursing professional in the areas of management, clinical, teaching and research.

Because the most powerful works analysing tools for intervention and prevention of suicidal behaviour are conducted with heterogeneous methodologies, it is not possible to obtain a unified approach to discerning which interventions are considered as effective and more efficacious. Therefore, conducting an umbrella review provides an assessment of the quality of the existing evidence and contributes to the creation of an overview (Aromataris et al., 2015; Biondi-Zoccai, 2016). An umbrella review is a review of reviews. That is, it is a methodology used to identify studies that synthesise higher levels of evidence on a specific topic to generate synthesis synopses (Chambergo-Michilot et al., 2021).

This general review aims to determine which interventions can be considered effective in the prevention and treatment of suicidal behaviour.

2 | METHODOLOGY

A detailed research protocol (Sufrate-Sorzano et al., 2021), was prepared and registered in the Prospective International Register of Systematic Reviews (PROSPERO) with registration number CRD42020221516.

2.1 | Database search

A search was carried out for papers published from 1 January 2011 to 1 May 2020. The databases used were Scopus, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Joanna Institute Briggs, Institute for Scientific Information Web of Knowledge (ISI WoK), PubMed and Cochrane Database of Systematic Reviews. The inclusion of the results was carried out by two reviewers independently. Next came an analysis of the references found in the papers that were included. Methodological quality analysis and data extraction from systematic reviews and meta-analyses were performed independently by two people. A third reviewer independently arbitrated any discrepancies resulting from the work of the two reviewers.

2.2 | Search terms

The keywords used for the systematic search were: Systematic review, Tertiary prevention, Secondary prevention, Primary prevention, Risk reduction behaviours, Suicidal ideation, Suicide attempt, Suicide, Risk, Risk assessment, Risk factors. Boolean AND and OR

operators combined the terms and were adapted according to the database used. The search strategy is shown in Supplement S1.

2.3 | Eligibility criteria

Systematic reviews and meta-analyses of men and women aged 18 years or older were included for analysis.

2.4 | Inclusion and exclusion criteria

The inclusion and exclusion criteria were systematic reviews indicating the databases used for the search and the selection of papers, whether or not they included meta-analyses. Specifically, the subject of the study had to be health interventions for the management or prevention of suicidal behaviour, suicide attempts or suicide itself. Systematic reviews were selected from the general community, that is population groups such as armed forces professionals, prisoners, war veterans and the military were not part of the analysis. All were published within the last 10 years in English or Spanish.

2.5 | Study selection

The selection process for the systematic reviews and meta-analyses was developed using Covidence software. Covidence is a screening and extraction tool that allows, among other functions, uploading search results, screening abstracts and full-text study reports, completing data collection, performing risk of bias assessment and resolving disagreements (Covidence, 2020). The initial search was conducted by one researcher. For the elimination of duplicates and the review of titles and abstracts, two independent peer reviews were used to confirm inclusion and exclusion criteria. Papers that were selected by at least one of the reviewers were analysed in full for re-evaluation. If discrepancies occurred, a third reviewer was asked to referee. In order to cover multidisciplinarity, the reviewers were a nurse, a psychologist and a graduate in medical anthropology.

The researchers retrieved a total of 3711 articles (PubMed 575, CINAHL 341, Scopus 1156, WOS 1563, CENTRAL 22 and JBI 54). After eliminating duplicate papers, 2302 results were analysed, first by title and abstract. The papers were selected by two reviewers following independent evaluation, and the disagreements that arose were discussed with a third reviewer. Next, the inclusion and exclusion criteria described above were applied, and 314 papers emerged as relevant, which were then critically analysed. Finally, 23 systematic reviews were chosen for this review. The procedure followed in this 'umbrella review' is shown in Figure 1. At each stage, three reviewers implemented measures to minimise the risk of bias and error.
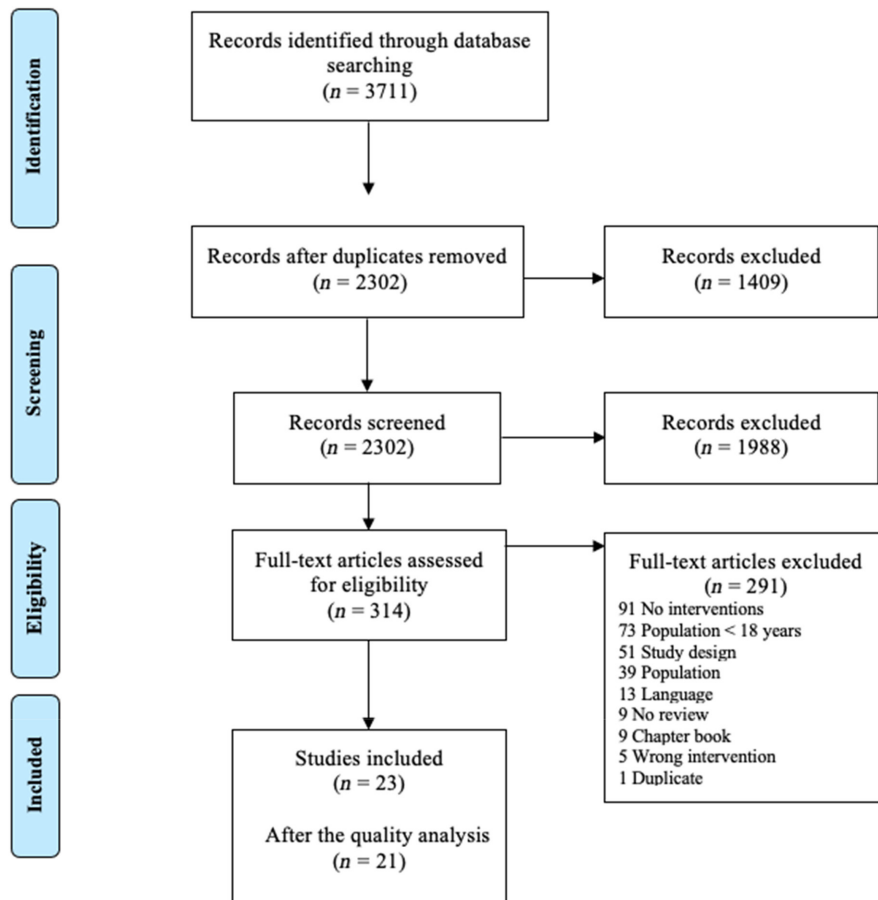
2.6 | Quality assessment

An independent quality assessment of the key papers was conducted by two reviewers using the 'JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses' (Joanna Briggs Institute, 2021). This tool uses 11 criteria that assign a general quality rating to each work, ranging from low quality, if the score is below 40%, to medium quality, if it is between 40%–70%, and high quality, when it exceeds 70%. In cases of disagreement, a consensus was reached through discussion with a third reviewer. In this phase of the investigation, the team agreed to exclude two papers whose quality level was lower than 40% (36% and 27%, respectively). The vast majority of the reviews included (14) were rated as being of 'high' quality, with scores ranging from 72% to 91%, and the rest of the papers (7) were rated as 'medium' with scores between 45% and 63%. The most common caveats were related to no details in the review question and a lack of methods for minimising errors during data extraction. The document Supplementary S2 shows the quality assessment of the reviews included.

2.7 | Data extraction

An adapted version of the 'JBI data extraction tool' was developed to create a data extraction form. This tool was piloted by eight members of the research team. The data extracted using this form were analysed based on the research question by two independent reviewers, who identified and summarised the interventions described in each study. The items included in the extraction tool include data on the reviewer, the date of the article, author, objectives of the study, number of studies analysed, method used, author's conclusions, comments and the date the review was carried out.

2.8 | Ethics

Research Ethics Committee approval was not required.

3 | RESULTS

A total of 21 reviews published from 2011 to 2020 were included.

Table 1 (description of selected studies) is organised by the year of publication of the reviews and summarises the selected studies in detail, including their stated objectives, main results and the number of studies covered by each review.

Most of the studies attempted to determine which interventions were effective for the prevention of suicidal behaviour (D'Anci et al., 2019; Hoffberg et al., 2019; Hofstra et al., 2020; Lapierre et al., 2011; Méndez-Bustos et al., 2019; Riblet et al., 2017). Some

TABLE 1 Description of the selected studies: objectives, numbers of studies and most important results.

Reference	Objectives	Studies	Results
Lapierre et al. (2011)	Examine results of interventions and identify successful strategies.	19	The detection and treatment of depression together with a reduction in isolation showed lower levels of ideation and suicide rates. In addition, it was more effective in women.
Winter et al. (2013)	Understand the current status of prevention and its effectiveness.	112	There is evidence for suicide prevention through cognitive behavioural therapy (CBT), dialectical behavioural therapy (DBT) and problem-solving therapy (PS).
Christensen et al. (2014)	Examine online suicide detection, the effectiveness of interventions and proactive interventions after identifying people at risk using their posts.	9	Online suicide screening: This appears to be accepted among the population but requires further research. The effectiveness of interventions increases if they are focused on suicidal thoughts and behaviour and not on symptoms associated with depression. Social networks show statistically significant potential for identifying people at risk.
Lai et al. (2014)	Review and evaluate suicide prevention strategies available on the web.	15	Internet-based cognitive behavioural therapy reduced ideation in the general population, and there are probable benefits of other web-based strategies for suicide prevention.
Milner et al. (2014)	Evaluate suicide prevention activities in the workplace.	13	No conclusions can be drawn about the effectiveness of suicide prevention in the workplace (observational or quasi-experimental studies with a lower capacity for making causal inferences).
Macedo et al. (2014)	Assess the effectiveness of resilience promotion interventions in adults. Assess their effectiveness for suicidal behaviour.	13	Most of the included studies report some degree of improvement in resilience among subjects exposed to a health promotion program.
Milner et al. (2015)	Synthesise evidence regarding the effectiveness of brief contact interventions for reducing self-harm, suicide attempts and completed suicide.	12	Brief contact interventions were successful in reducing the frequency of reversion to self-harm.
Robinson et al. (2016)	Identify current evidence related to social networks as a tool for suicide prevention.	30	Research of social networks as suicide prevention tools presented positive findings due to their reach, anonymity, instantaneity, acceptability and absence of prejudice, showing key advantages over other methods.
Meerwijk et al. (2016)	Assess whether psychosocial and behavioural interventions that address suicidal thoughts and behaviours are more effective for reducing suicides and suicide attempts than interventions that address only associated symptoms	53	Psychosocial and behavioural interventions that directly address suicidal thoughts and behaviours are effective in both the short and long term, while treatments that address symptoms associated with suicidal behaviour are only effective in the long term.
Larsen et al. (2016)	To examine the concordance of the characteristics of available applications with the current scientific evidence on effective suicide prevention strategies.	49	Some applications provide evidence-based best-practice elements with statistically significant preventive results, but none provide comprehensive, evidence-based support. Harmful online content has been identified, so caution must be employed when recommending its use.
Okolie et al. (2017)	Identify and evaluate the evidence on the effectiveness of interventions for older adults for the prevention of suicidal behaviour and reduction of suicidal ideation.	21	Multifaceted interventions in older adults can be effective for preventing suicidal behaviour and reducing ideation.
Gøtzsche & Gøtzsche (2017)	Assess the efficacy of cognitive behavioural therapy for suicide prevention.	20	Cognitive behavioural therapy compared to usual treatment reduces the risk of a new suicide attempt by 50%.

TABLE 1 (Continued)

Reference	Objectives	Studies	Results
Riblet et al. (2017)	Identify interventions for suicide prevention.	78	The WHO brief contact intervention (BIC) is a promising suicide prevention strategy. No other intervention showed a statistically significant effect in reducing suicide; lithium and CBT trials reduced deaths from suicide but without definitive statistical conclusions.
Tighe et al. (2018)	Assess the efficacy of acceptance and commitment therapy for reducing suicidal ideation and self-harm.	5	In 2 studies (pre- and post-intervention), acceptance and commitment therapy (ACT) was effective for reducing suicidal ideation. There is insufficient evidence to recommend ACT as a preventive intervention.
Méndez-Bustos et al. (2019)	Review available scientific evidence on the effectiveness of psychotherapeutic tools designed to treat patients at risk of suicide.	40	The results confirm the effectiveness of psychotherapeutic interventions for the management and reduction of suicide risk. DBT and CBT seem to be the most widely used psychotherapeutic interventions for patients who present suicidal ideation or past suicide attempts.
Briggs et al. (2019)	Systematically review randomised controlled trials of psychoanalytic and psychodynamic psychotherapies for suicide attempts and self-harm.	12	Psychoanalytic and psychodynamic psychotherapies are effective for reducing suicidal behaviour and self-harm and improving psychosocial well-being.
D'Anci et al. (2019)	Assess risks/benefits of interventions related to suicide prevention.	23	In-person or online CBT shows moderate evidence for reducing suicide attempts, suicidal ideation and hopelessness compared to standard treatment. There is moderate evidence for the use of intravenous ketamine in the short term to reduce suicidal ideation and the use of lithium to reduce suicide.
Hoffberg et al. (2019)	Review the clinical effectiveness of psychotherapeutic tools designed to treat patients at risk of suicide.	40	DBT and CBT are the most widely used psychotherapeutic interventions, and they show promising results. Group therapies and Internet-based therapies are promising treatments and require further study.
Melia et al. (2020)	Examine the effectiveness of mobile technological tools available for the prevention of suicidal tendencies.	7	Mobile technology reduces depression, distress and self-harm and increases coping strategies.
Büscher et al. (2020)	Study whether internet-based self-help interventions are associated with a reduction in suicidal ideation.	6	Internet-based self-help interventions are associated with statistically significant reductions in suicidal ideation.
Hofstra et al. (2020)	Evaluate the effects of suicide prevention interventions.	16	The findings show that preventive interventions are effective for preventing both completed suicides and suicide attempts. The effect size is larger for completed suicides than for suicide attempts.

studies evaluated specific interventions such as brief contact (Milner et al., 2015), the promotion of resilience in adults (Macedo et al., 2014), and acceptance and commitment therapy (Tighe et al., 2018) and assessed their role in suicide prevention. In the quality analysis, the review by Milner et al. (2015) scored 45%, with shortcomings mainly in the assessment of the likelihood of publication bias and methods to minimise errors in data extraction. Tighe et al. (2018) exceeded 60% and Macedo et al. (2014) reached a 90% score.

The interventions described in the selected reviews were placed into five main categories to facilitate proper analysis: therapy-based interventions, pharmacotherapy-related interventions, Internet-based interventions, patient and healthcare professional-related interventions and community-related interventions.

3.1 | Therapy-based interventions

Therapy-based interventions include those based on dialectical behavioural therapy, cognitive behavioural therapy, problem-solving and adaptation therapy, psychodynamic therapy, psychoanalytic therapy, family, interpersonal, group therapy and acceptance and commitment (Briggs et al., 2019; D'Anci et al., 2019; Gøtzsche & Gøtzsche, 2017; Hofstra et al., 2020; Lai et al., 2014; Lapierre et al., 2011; Meerwijk et al., 2016; Melia et al., 2020; Milner et al., 2015; Okolie et al., 2017; Riblet et al., 2017; Tighe et al., 2018; Winter et al., 2013).

Briggs et al. (2019) concluded that psychoanalytic and psychodynamic psychotherapies are effective for reducing suicidal behaviour and self-harm and for improving psychosocial well-being. Along the

same lines, two reviews published in 2019 determined that dialectical behavioural therapy and cognitive behavioural therapy—the most widely used psychotherapeutic interventions—showed the most promising and effective results among all treatments for patients with suicidal ideation or suicide attempts (D'Anci et al., 2019; Méndez-Bustos et al., 2019), and further determined that cognitive behavioural therapy reduces the risk of a new suicide attempt by 50% compared to the usual treatment (Gøtzsche & Gøtzsche, 2017). There is insufficient evidence to recommend acceptance and commitment therapy as a prevention intervention, although in pre–post studies, such therapy was effective for reducing suicidal ideation (Tighe et al., 2018). Group-based therapies require further study (Hoffberg et al., 2019).

3.2 | Pharmacotherapy-related interventions

Interventions related to pharmacotherapy included educating patients about pharmacological treatments and controlling side effects while providing information on topics such as improving adherence to achieve greater stabilisation (D'Anci et al., 2019; Lapierre et al., 2011; Meerwijk et al., 2016; Okolie et al., 2017). A 2017 review concluded that trials with lithium reduced deaths from suicide, although without definitive statistical conclusions (Riblet et al., 2017). Subsequently, 2 years later, moderate evidence was identified regarding the use of short-term intravenous ketamine to reduce suicidal ideation, and the use of lithium to reduce suicide (D'Anci et al., 2019). Along with those lines, a systematic review with meta-analysis from Meerwijk et al. (2016) confirmed that promoting patient adherence to treatment by means of postcards, telephone calls, home visits or letters of support was effective in addressing the symptoms associated with suicidal behaviour. Furthermore, this review, with meta-analysis, showed that interventions that directly target suicidal behaviour are effective immediately and in the long term, while interventions that target related symptoms are only effective in the long term.

3.3 | Internet-based interventions

Interventions developed by using online technologies and platforms, the applications available for mobile devices, and social networks have been classified as Internet-based interventions. Evidence has been identified for the effective use of psychological therapies such as cognitive behavioural therapy, self-help therapy, support groups and group chats in online formats (Büscher et al., 2020; Christensen et al., 2014; Lai et al., 2014; Larsen et al., 2016; Melia et al., 2020; Robinson et al., 2016). Along these lines, Internet-based cognitive behavioural therapy reduced suicidal ideation in the general population (Lai et al., 2014). Furthermore, a systematic review from 2016 showed evidence that social media is a suicide prevention tool with key advantages over other methods, due to its scope, anonymity, instantaneity, acceptability and absence of prejudice (Robinson et al., 2016). A meta-analysis by Büscher et al. (2020) concluded that Internet-based self-help interventions were associated with statistically significant

reductions in suicidal ideation. Notably, the quality analysis of this review scored over 90% (high quality). Specifically, online intervention is also effective for improving resilience (a protective factor for suicidal behaviour) in adult patients using health promotion programmes (Macedo et al., 2014). Christensen et al. (2014) determined that online suicide screening is accepted among the population, but additional research is required to determine its correct application. Some applications available for mobile devices showed evidence-based elements of best practice with statistically significant results at a preventive level, but none provided comprehensive, evidence-based support. Harmful content has been identified online (Picardo et al., 2020); therefore, caution must be exercised when recommending such interventions (Larsen et al., 2016). A 2020 systematic review examined the effectiveness of the mobile technological tools available for the prevention of all suicidal tendencies and determined such technology had the positive impacts of reducing depression, anxiety and self-harm, in addition to increasing coping strategies (Melia et al., 2020). No evidence was found on how a health professional may go about assessing the risk of suicide.

3.4 | Patient and healthcare professional-related interventions

Winter et al. (2013) determined that teaching patients social and coping skills was an effective strategy, while work by Meerwijk et al. (2016) established that psychosocial and behavioural interventions that directly address suicidal thoughts and behaviours are effective in both the short and long term, while treatments that address the symptoms associated with suicidal behaviour are only effective in the long term. Lapierre et al. (2011) expanded upon this idea, determining that the detection and treatment of depression together with the reduction of isolation were associated with lower levels of ideation and suicide rates, more so in women than in men. The therapeutic alliance established between professional therapist and patient has been determined by several reviews to be the basis of health care and protective elements (Briggs et al., 2019; Lapierre et al., 2011; Riblet et al., 2017).

3.5 | Community-related interventions

The prevention of suicidal behaviour requires multidisciplinary action; therefore, collaboration of the population with related organisations is necessary. Therefore, strategies categorised as community-related interventions promote access to health services, community awareness, standardisation of the information included when publishing suicides in the press, reduction of access to the media, gatekeeper figures in the community, evaluation of the quality of the information contained on web pages and mental health (D'Anci et al., 2019; Hofstra et al., 2020; Lai et al., 2014; Lapierre et al., 2011; Macedo et al., 2014; Milner et al., 2014; Okolie et al., 2017). Table 2 displays the interventions analysed in each review.

TABLE 2 Interventions found in the reviews analysed.

Interventions\Authors	Briggs et al. (2019)	Büscher et al. (2020)	Christensen et al., 2014)	D'Anci et al. (2019)	Gøtzsche & Gøtzsche (2017)	Hoffberg et al. (2019)	Hofstra et al. (2020)	Lai et al. (2014)	Lapierre (2011)
Dialectical behavioural therapy		x	x	x		x	x		x
Cognitive behavioural therapy		x	x	x	x	x	x		x
Problem-solving/adaptation therapy			x			x			
Psychodynamic therapy	x					x			
Psychoanalytic therapy	x								
Family therapy						x			
Interpersonal therapy						x			x
Therapy/support groups								x	
Therapy based on acceptance and commitment									
Gatekeeper							x		
Personalised therapeutic relationship/alliance	x								x
Active follow-up, contact and brief intervention (_by phone, e-mail, postal mail_)			x			x	x	x	x
Pharmacotherapy, adherence to treatment and control of side effects				x					x
Detection and treatment of depression									x
Skills training (_social, coping_)									
Phycological education, self-care and counselling	x					x	x	x	
Online intervention (_cognitive behavioural therapy, self-help therapy, chat, support groups_)		x						x	

Interventions\Authors	Briggs et al. (2019)	Büscher et al. (2020)	Christensen et al. (2014)	D'Anci et al. (2019)	Gøtzsche & Gøtzsche (2017)	Hoffberg et al. (2019)	Hofstra et al. (2020)	Lai et al. (2014)	Lapierre (2011)
Follow-up visits/meetings						x			x
Promotion of mental health, stress management and strengthening of protective factors (_resilience, hope_)									x
Contact and support in crisis									
Control of mood and emotions	x								
Instructions on publication to the press							x		
Community awareness									
Reduced access to media									
Access to health services								x	
Evaluation of the quality of informational websites								x	

4 | DISCUSSION

In this article, we identified the most effective tools described for the treatment and intervention of patients exhibiting suicidal behaviour and conduct. To achieve a broad and comprehensive overview of existing interventions supported by the best evidence, a broad search was conducted encompassing systematic reviews and meta-analyses. An assessment of the methodological quality of the included systematic reviews and meta-analyses performed by two independent reviewers determined a high-quality rating for most of the studies.

Larsen et al. (2016)	Macedo et al. (2014)	Meerwijk et al. (2016)	Melia et al. (2020)	Méndez-Bustos et al. (2019)	Milner et al. (2015)	Milner et al. (2014)	Okolie et al. (2017)	Riblet et al. (2017)	Robinson et al. (2016)	Tighe et al. (2018)	Winter et al. (2013)
x		x	x	x							x
		x		x	x			x			x
		x		x			x				x
				x							x
				x							x
				x							x
				x			x				
	x	x					x	x			x
			x							x	
						x	x				
									x		
		x		x	x		x	x	x		
		x					x	x			
						x	x				
		x	x	x		x					x
x			x	x		x	x	x			
	x								x		

Larsen et al. (2016)	Macedo et al. (2014)	Meerwijk et al. (2016)	Melia et al. (2020)	Méndez-Bustos et al. (2019)	Milner et al. (2015)	Milner et al. (2014)	Okolie et al. (2017)	Riblet et al. (2017)	Robinson et al. (2016)	Tighe et al. (2018)	Winter et al. (2013)
		x		x							x
	x					x					
x			x		x				x		
x			x	x							
						x					
						x					

The results confirmed the effectiveness of psychotherapeutic interventions for the management and reduction of suicide risk. The scientific literature shows that—in addition to being the most prevalent interventions in use—dialectical behavioural therapy and cognitive behavioural therapy are the most promising and effective interventions for patients with suicidal ideation or previous suicide attempts (D'Anci et al., 2019; Gøtzsche & Gøtzsche, 2017; Lai et al., 2014; Meerwijk et al., 2016; Méndez-Bustos et al., 2019; Milner et al., 2014).

Along these lines, Gøtzsche and Gøtzsche (2017) related interventions based on cognitive behavioural therapy to a 50% reduction

in the repetition of suicidal behaviour. Psychoanalytic and psychodynamic therapies, although used less frequently, are effective for improving the emotional well-being of patients, which helps reduce self-harm (Briggs et al., 2019; Hoffberg et al., 2019; Méndez-Bustos et al., 2019; Winter et al., 2013).

As for restricting access to the most widely used lethal methods, there is clear evidence this is beneficial in prevention. However, research efforts should now be directed towards exploring what new methods could replace them, with the aim of working proactively.

The umbrella review identified interventions specifically aimed at selective and indicated prevention, but few interventions directly related to the universal prevention of suicidal behaviour.

New communication technologies, including social networks, chats, online platforms and mobile applications are therapeutic tools with statistically significant preventive results. The scope, anonymity, instantaneity and acceptability of these new information and communication technologies allow them to act as key therapeutic elements. Internet-based self-help interventions, online cognitive behavioural therapy, support groups through group chats and new mobile applications that provide users with evidence-based, best-practice elements are associated with statistically significant reductions in suicidal ideation (Büscher et al., 2020; Christensen et al., 2014; Lai et al., 2014; Larsen et al., 2016; Melia et al., 2020; Robinson et al., 2016). However, harmful content and even inducers of suicidal behaviour have been identified on the Internet. Trained health professionals should review these applications before recommending their use to patients, in addition to controlling and monitoring them.

These online suicide prevention strategies have become complementary to conventional strategies (Larsen et al., 2016; Macedo et al., 2014; Robinson et al., 2016) and open up new possibilities for health policies and programmes to examine their resources and adapt to the new needs of society. In this vein, questions are being raised about the management of confidentiality, the professional–patient relationship and intervention in acute crises involving immediate risk. More studies are needed to evaluate the effectiveness of online interventions and foster their use over conventional interventions.

In many cases, the aetiology of suicidal behaviour is related to the presence of a serious underlying mental disorder, and in these cases, adherence to treatment in order to stabilise a patient is essential for the prevention of suicidal behaviour. Therapeutic interventions related to the administration of medication, including patient training on the use of psychotropic drugs, proper follow-up, adherence and the control of side effects showed statistically significant evidence of being interventions of choice for the prevention and treatment of suicidal behaviour (D'Anci et al., 2019; Lapierre et al., 2011; Meerwijk et al., 2016; Okolie et al., 2017; Riblet et al., 2017). Mood regulators such as lithium are included among the drugs most commonly used in these preventive programmes (D'Anci et al., 2019).

In relation to conventional antidepressant treatment, some patients do not respond correctly or suffer the adverse effects of this treatment, which is a problem especially when suicidal risk behaviours may develop. In relation to conventional antidepressant treatment, some patients do not respond well or suffer the adverse

effects of it, being a problem especially when suicidal risk behaviours may develop. Triple Chronotherapy (sleep deprivation, sleep phase advancement and bright light therapy) is safe and effective in producing a rapid and stable improvement of depressive symptoms and a reduction of suicidal risk (D'Agostino et al., 2020).

Brief contact interventions should be highlighted as high-quality preventive interventions when assessing active patient follow-up. Several studies link brief contact interventions with reduced suicide attempts (Milner et al., 2015; Riblet et al., 2017). The efficacy of these interventions has been demonstrated for direct contact and contact via telephone, e-mail or postal mail (Büscher et al., 2020; Christensen et al., 2014; Melia et al., 2020; Riblet et al., 2017; Robinson et al., 2016).

The therapeutic alliance between a healthcare professional and a patient has been established to be a protective element against suicidal behaviour, in addition to protocolised active contact and follow-up (Briggs et al., 2019; Lapierre et al., 2011; Riblet et al., 2017).

The epidemiology of suicide shows, on the one hand, that men have a higher suicide rate than women due to the greater lethality of the suicide methods used, and on the other hand, that women make a greater number of attempts (Barroso Martínez, 2019). The reviews we analysed do not allow us to determine a greater or lesser effectiveness for interventions based on sex (anatomy) or gender (social construction), so it is necessary to conduct new research that addresses suicide from a gender perspective to build new evidence based on the roles and characteristics of the population.

After reviewing the scientific literature, no intervention has been found in the set analysed that specifically stands out for its efficacy over the others, so the prevention and treatment of suicidal behaviour requires comprehensive management in which patients are provided with coping tools (Winter et al., 2013), behavioural interventions that directly address suicidal thoughts and behaviours (Meerwijk et al., 2016), emotional management through psychoanalytic and psychodynamic therapies, conventional therapies coupled with new information and communication technologies, support through therapeutic alliances and brief contact interventions, and treatment adherence support (Milner et al., 2015).

Within the theory of Basic Human Needs of the nurse Virginia Henderson, the importance of avoiding dangers in the environment is described, understanding as such 'the ability to maintain and promote one's own physical and mental integrity of oneself and others, in knowledge of the potential dangers of the environment' (Henderson, 1961). This research provides nursing professionals with the necessary basis for quality clinical practice in the care, prevention and treatment of patients at risk of suicide. The different therapeutic interventions described allow nurses to develop their professionalism with scientific evidence.

4.1 | Limitations

The main limitation of this umbrella review is that the decisions about the evidence for interventions are based on the judgement

of the research team, which means that reproducing the findings may be more difficult than in a meta-analysis. To minimise this, ten researchers were part of the process and conflicts were arbitrated by consensus. A meta-analysis was not possible due to the heterogeneity of the methodologies. Another limitation could be the language of the publications, as only English and Spanish reviews were considered. Finally, the review covers the years from 2011 to 2020.

5 | CONCLUSION

This work offers a highly methodological synthesis that allows for the identification of the most effective interventions of choice for the treatment and prevention of suicidal behaviour. It provides a joint and comprehensive review of the therapeutic interventions with the best evidence and may serve as the basis for clinical intervention guidelines and protocols and specific suicide prevention plans. These results allow health professionals to utilise evidence when making decisions in their daily practice.

CONFLICT OF INTEREST STATEMENT
None declared.

DATA AVAILABILITY STATEMENT
Data available on request from the authors. The data that support the findings of this study are available from the corresponding author upon reasonable request. Sufrate-Sorzano, T.; 2023; Data repository Interventions of choice for the prevention and treatment of suicidal behaviours: an umbrella review; Dropbox.

ETHICS AND DISSEMINATION
Formal Research Ethics Committee approval is not required for this umbrella review under Spanish law, as no primary data are collected, and no patient intervention is involved.

ORCID
Teresa Sufrate-Sorzano https://orcid.org/0000-0003-3756-9914
Iván Santolalla-Arnedo https://orcid.org/0000-0001-6705-7122
María Elena Garrote-Cámara https://orcid.org/0000-0002-7504-4070
Beatriz Angulo-Nalda https://orcid.org/0000-0003-0739-1342
Ruth Cotelo-Sáenz https://orcid.org/0000-0003-3350-3678
Roland Pastells-Peiró https://orcid.org/0000-0002-9561-9038
Filip Bellon https://orcid.org/0000-0003-4880-9207
Joan Blanco-Blanco https://orcid.org/0000-0002-4868-2974
Raúl Juárez-Vela https://orcid.org/0000-0003-3597-2048
Fidel Molina-Luque https://orcid.org/0000-0001-5278-2794

REFERENCES

Anseán, A. (2014). *Spanish Foundation for Mental Health for the Prevention of Mental Disorders and Suicide. Manual on prevention, intervention and postvention of suicidal behaviour.* La Rioja Government.

Aromataris, E., Fernandez, R., Godfrey, C. M., Holly, C., Khalil, H., & Tungpunkom, P. (2015). Summarizing systematic reviews: Methodological development, conduct and reporting of an umbrella review approach. *International Journal of Evidence-Based Healthcare*, *13*(3), 132–140. https://doi.org/10.1097/xeb.0000000000000055

Barroso Martínez, A. A. (2019). Comprender el suicidio desde una perspectiva de género: una revisión crítica bibliográfica. *Revista de la Asociación Española de Neuropsiquiatría*, *39*(135), 51–66.

Biondi-Zoccai, G. (Ed.). (2016). *Umbrella reviews: Evidence synthesis with overviews of reviews and meta-epidemiologic studies.* Springer International Publishing.

Briggs, S., Netuveli, G., Gould, N., Gkaravella, A., Gluckman, N. S., Kangogyere, P., Farr, R., Goldblatt, M. J., & Lindner, R. (2019). The effectiveness of psychoanalytic/psychodynamic psychotherapy for reducing suicide attempts and self-harm: systematic review and meta-analysis. *The British Journal of Psychiatry: the Journal of Mental Science*, *214*(6), 320–328. https://doi.org/10.1192/bjp.2019.33

Büscher, R., Torok, M., Terhorst, Y., & Sander, L. (2020). Internet-based cognitive behavioural therapy to reduce suicidal ideation: A systematic review and meta-analysis: A systematic review and meta-analysis. *JAMA Network Open*, *3*(4), e203933. https://doi.org/10.1001/jamanetworkopen.2020.3933

Campo-Arias, A., & Suárez-Colorado, Y. (2019). ¿Es el suicidio un evento prevenible? *Revista de la Universidad Industrial de Santander Salud*, *51*(3), 197–199. https://doi.org/10.18273/revsal.v51n3-2019002

Chambergo-Michilot, D., Diaz-Barrera, M. E., & Benites-Zapata, V. A. (2021). Revisiones de alcance, revisiones paraguas y síntesis enfocada en revisión de mapas: aspectos metodológicos y aplicaciones. *Revista Peruana de Medicina Experimental y Salud Pública*, *38*(1), 136–142. https://doi.org/10.17843/rpmesp.2021.381.6501

Christensen, H., Batterham, P. J., & O'Dea, B. (2014). E-health interventions for suicide prevention. *International Journal of Environmental Research and Public Health*, *11*(8), 8193–8212. https://doi.org/10.3390/ijerph110808193

Covidence [program]. (2020). Melbourne, Australia: Veritas Health Innovation. www.covidence.org

D'Agostino, A., Ferrara, P., Terzoni, S., Ostinelli, E. G., Carrara, C., Prunas, C., Gambini, O., & Destrebecq, A. (2020). Efficacy of triple chronotherapy in unipolar and bipolar depression: a systematic review of the available evidence. *Journal of Affective Disorders*, *276*, 297–304.

D'Anci, K. E., Uhl, S., Giradi, G., & Martin, C. (2019). Treatments for the prevention and management of suicide: A systematic review: A systematic review. *Annals of Internal Medicine*, *171*(5), 334–342. https://doi.org/10.7326/M19-0869

Gøtzsche, P. C., & Gøtzsche, P. K. (2017). Cognitive behavioural therapy halves the risk of repeated suicide attempts: systematic review. *Journal of the Royal Society of Medicine*, *110*(10), 404–410. https://doi.org/10.1177/0141076817731904

Grupo de Trabajo de la Guía de Práctica Clínica de Prevención y Tratamiento de la Conducta Suicida. (2011). Ministerio de Salud, Políticas Sociales e Igualdad. Guía de práctica clínica para la prevención y tratamiento de la conducta suicida. Madrid.

Henderson, V. (1961). Principios Básicos de los Cuidados de Enfermería. Publicación científica no. 57. In *Organización Mundial de la Salud*.

Hoffberg, A. S., Stearns-Yoder, K. A., & Brenner, L. A. (2019). The effectiveness of crisis line services: A systematic review. *Frontiers in Public Health*, *7*, 399. https://doi.org/10.3389/fpubh.2019.00399

Hofstra, E., van Nieuwenhuisen, C., Bakker, M., Özgül, D., Elfeddali, I., de Jong, S. J., & van der Feltz-Cornelis, C. M. (2020). Effectiveness of

suicide prevention interventions: A systematic review and meta-analysis. *General Hospital Psychiatry*, *63*, 127–140. https://doi.org/10.1016/j.genhosppsych.2019.04.011

Joanna Briggs Institute. (2021). The Joanna Briggs Institute critical appraisal tools for use in JBI systematic reviews. Checklist for systematic reviews and research syntheses. https://jbi.global/critical-appraisal-tools

Lai, M. H., Maniam, T., Chan, L. F., & Ravindran, A. V. (2014). Caught in the web: a review of web-based suicide prevention. *Journal of Medical Internet Research*, *16*(1), e30. https://doi.org/10.2196/jmir.2973

Lapierre, S., Erlangsen, A., Waern, M., De Leo, D., Oyama, H., Scocco, P., Gallo, J., Szanto, K., Conwell, Y., Draper, B., Quinnett, P., & International Research Group for Suicide among the Elderly. (2011). A systematic review of elderly suicide prevention programs. *Crisis*, *32*(2), 88–98. https://doi.org/10.1027/0227-5910/a000076

Larsen, M. E., Nicholas, J., & Christensen, H. (2016). A systematic assessment of smartphone Tools for suicide prevention. *PLoS One*, *11*(4), e0152285. https://doi.org/10.1371/journal.pone.0152285

Macedo, T., Wilheim, L., Gonçalves, R., Coutinho, E. S. F., Vilete, L., Figueira, I., & Ventura, P. (2014). Building resilience for future adversity: a systematic review of interventions in non-clinical samples of adults. *BMC Psychiatry*, *14*(1), 227. https://doi.org/10.1186/s12888-014-0227-6

Meerwijk, E. L., Parekh, A., Oquendo, M. A., Allen, I. E., Franck, L. S., & Lee, K. A. (2016). Direct versus indirect psychosocial and behavioural interventions to prevent suicide and suicide attempts: a systematic review and meta-analysis. *The Lancet Psychiatry*, *3*(6), 544–554. https://doi.org/10.1016/S2215-0366(16)00064-X

Melia, R., Francis, K., Hickey, E., Bogue, J., Duggan, J., O'Sullivan, M., & Young, K. (2020). Mobile health technology interventions for suicide prevention: Systematic review. *JMIR mHealth and uHealth*, *8*(1), e12516. https://doi.org/10.2196/12516

Méndez-Bustos, P., Calati, R., Rubio-Ramírez, F., Olié, E., Courtet, P., & Lopez-Castroman, J. (2019). Effectiveness of psychotherapy on suicidal risk: A systematic review of observational studies. *Frontiers in Psychology*, *10*, 277. https://doi.org/10.3389/fpsyg.2019.00277

Milner, A. J., Carter, G., Pirkis, J., Robinson, J., & Spittal, M. J. (2015). Letters, green cards, telephone calls and postcards: systematic and meta-analytic review of brief contact interventions for reducing self-harm, suicide attempts and suicide. *The British Journal of Psychiatry: the Journal of Mental Science*, *206*(3), 184–190. https://doi.org/10.1192/bjp.bp.114.147819

Milner, A. J., Page, K., Spencer-Thomas, S., & Lamotagne, A. D. (2014). Workplace suicide prevention: a systematic review of published and unpublished activities. *Health Promotion International*, *30*(1), 29–37. https://doi.org/10.1093/heapro/dau085

Ministry of Health. (2009). *II Plan de Salud de La Rioja 2009–2013*. La Rioja Governement.

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

Oliván, I. D., Segovia, A. P., Barrigón, M. L., De la Cruz, M., & García, E. B. (2021). Acontecimientos vitales estresantes como factores de riesgo proximales para una crisis suicida: Estudio de casos y controles. *Actas Españolas de Psiquiatría*, *49*(3), 88–95.

Picardo, J., McKenzie, S. K., Collings, S., & Jenkin, G. (2020). Suicide and self-harm content on Instagram: A systematic scoping review. *PLoS One*, *15*(9), e0238603.

Riblet, N. B. V., Shiner, B., Young-Xu, Y., & Watts, B. V. (2017). Strategies to prevent death by suicide: meta-analysis of randomised controlled trials. *The British Journal of Psychiatry: the Journal of Mental Science*, *210*(6), 396–402. https://doi.org/10.1192/bjp.bp.116.187799

Robinson, J., Cox, G., Bailey, E., Hetrick, S., Rodrigues, M., Fisher, S., & Herrman, H. (2016). Social media and suicide prevention: a systematic review: Suicide prevention and social media. *Early Intervention in Psychiatry*, *10*(2), 103–121. https://doi.org/10.1111/eip.12229

Scheftlein, J. (2011). The European pact for mental health and well-being. *Psychiatrische Praxis*, *38*(S 01), K02. https://doi.org/10.1055/s-0031-1277729

Sufrate-Sorzano, T., Juárez-Vela, R., Ramírez-Torres, C. A., Rivera-Sanz, F., Garrote-Camara, M. E., Roland, P.-P., Gea-Sánchez, M., Del Pozo-Herce, P., Gea-Caballero, V., Angulo-Nalda, B., & Santolalla-Arnedo, I. (2021). Nursing interventions of choice for the prevention and treatment of suicidal behaviour: The umbrella review protocol. *Nursing Open*, *00*, 1–6. https://doi.org/10.1002/nop2.1068

Suicidal Behaviour Prevention and Treatment Clinical Practice Guideline Working Group. Ministry of Health, Social Policy and Equality. (2011). *Clinical Practice Guideline on the Prevention and Treatment of Suicidal Behaviour.* Galician Agency for the Evaluation of Health Technologies.

Tighe, J., Nicholas, J., Shand, F., & Christensen, H. (2018). Efficacy of acceptance and commitment therapy in reducing suicidal ideation and deliberate self-harm: Systematic review. *JMIR Mental Health*, *5*(2), e10732. https://doi.org/10.2196/10732

Winter, D., Bradshaw, S., Bunn, F., & Wellsted, D. (2013). A systematic review of the literature on counselling and psychotherapy for the prevention of suicide: 1. Quantitative outcome and process studies. *Counselling and Psychotherapy Research*, *13*(3), 164–183. https://doi.org/10.1080/14733145.2012.761717

World Health Organization. (2011). Intervention guide for mental, neurological and substance use disorders in non-specialised health settings: mental health Gap Action Programme. https://www.who.int/publications/i/item/9789241549790

World Health Organization. (2013). Mental health action plan 2013–2020. http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R8-en.pdf

World Health Organization. (2014). Preventing suicide: A global imperative. https://www.who.int/publications/i/item/9789241564779

World Health Organization. (2018). Suicide: data and figures. https://www.who.int/es/news-room/fact-sheets/detail/sucide

World Health Organization. (2021a). Live life: an implementation guide for suicide prevention in countries. https://www.who.int/publications/i/item/9789240026629

World Health Organization. (2021b). Suicide. https://www.who.int/es/news-room/fact-sheets/detail/suicide

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.