

BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjopen.bmj.com>).

If you have any questions on BMJ Open's open peer review process please email info.bmjopen@bmj.com

BMJ Open

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075116
Article Type:	Protocol
Date Submitted by the Author:	26-Apr-2023
Complete List of Authors:	Comendador, Laura; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Jimenz Villamizar, Mara Paola; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Losilla, Josep-Maria; Autonomous University of Barcelona, Department of Psychobiology and Methodology of Health Science Area of Behavioral Science Methodology Sanabria-Mazo, Juan; Institut de Recerca Sant Joan de Déu; Autonomous University of Barcelona, Department of Basics Mateo Canedo, Corel; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Cebria, Ana Isabel ; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Sanz, Antoni; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Palao, Diego; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute
Keywords:	Suicide & self-harm < PSYCHIATRY, Telemedicine < BIOTECHNOLOGY & BIOINFORMATICS, PREVENTIVE MEDICINE

SCHOLARONE™
Manuscripts

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Laura Comendador^{1,2}, María P. Jiménez-Villamizar³, Josep-Maria Losilla⁴, Juan P. Sanabria-Mazo^{3,5}, Corel Mateo-Canedo³, Ana Isabel Cebrià^{2,6,7}, Antoni Sanz^{3,8}, Diego Palao^{1,2,7}

¹Department of Psychiatry and Forensic Medicine, Faculty of Medicine, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

²Department of Mental Health, Unitat Mixta de Neurociència Traslacional I3PT-INc-UAB, Institut d'Investigació i Innovació Parc Taulí I3PT, University Hospital Parc Taulí. 08208 Sabadell, Spain.

³Department of Basic, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁴Department of Psychobiology and Methodology of Health Sciences, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁵Teaching, Research & Innovation Unit, Parc Sanitari Sant Joan de Déu. 08830 Sant Boi de Llobregat, Spain.

⁶Department of Clinical and Health Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁷Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Instituto de Salud Carlos III. 28029 Madrid, Spain.

⁸Stress and Health Research Group (GIES). Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

Corresponding authors

Antoni Sanz, PhD

Department of Basics, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona.

Carrer de la Fortuna, s/n. Campus de Bellaterra, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès (Spain).

E-mail: antonio.sanz@uab.cat

Ana Isabel Cebrià, PhD

Mental Health Service. Hospital Universitari Parc Taulí. Unitat Mixta de Neurociència Traslacional I3PT-INc-UAB.

Parc Taulí, 1. 08208 Sabadell, Barcelona (Spain).

E-mail: acebria@tauli.cat

Author Note

Laura Comendador Vázquez, MSc. E-mail: laura.comendador@uab.cat

ORCID 0000-0002-5221-4794

María P. Jiménez-Villamizar, MSc. E-mail: mariapaola.jimenez@autonoma.cat

ORCID 0000-0003-2264-7422

Josep-Maria Losilla, PhD. E-mail: JosepMaria.Losilla@uab.cat

ORCID 0000-0002-5140-5847

Juan P. Sanabria-Mazo, MSc. E-mail: juanpablo.sanabria@sjd.es

ORCID 0000-0003-1688-435X

Corel Mateo-Canedo, MSc. E-mail: Corel.Mateo@uab.cat

ORCID 0000-0002-0620-9257

Ana Isabel Cebrià Meca, PhD. E-mail: acebria@tauli.cat

ORCID 0000-0002-2632-8130

Antoni Sanz Ruíz, PhD. E-mail: antonio.sanz@uab.cat

ORCID 0000-0002-7952-4477

1
2
3 Diego J. Palao Vidal, MD, PhD. E-mail: dpalao@tauli.cat
4 ORCID 0000-0002-3323-6568
5
6

7 Word count: 5227 words (including main text and references)
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

The effect of synchronous remote-based interventions on suicidal behaviours:

Protocol for a systematic review and meta-analysis

ABSTRACT

Introduction Suicide is among the leading causes of preventable death worldwide. The impact of suicide affects personal, social, and economic level. Therefore, its prevention is a priority for public health systems. Previous studies seem to support the efficacy of providing active contact to people who have made a suicide attempt. The current systematic review and meta-analysis aims to investigate the efficacy of distance suicide prevention strategies implemented through synchronous technology-based interventions.

Methods and analysis This protocol is designed according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P). The bibliographic searches will be conducted in the databases MEDLINE/PubMed, PsycInfo, Scopus, and Web of Science until April 2022, with no restrictions on the time of publication and limited to publications in English or Spanish. The search strategy will be performed using free-text terms and Medical Subject Headings (MeSH) terms: suicide, follow-up, synchronous, remote, telehealth, telephone, hotline, videoconference, and text message. Two reviewers will independently conduct study screening, selection process, data extraction, and risk of bias (RoB) assessment. The analyses and synthesis of the results will be both qualitative and quantitative. If meta-analysis is not appropriate due to substantial heterogeneity, a narrative synthesis will be provided.

Ethics and dissemination The present review and meta-analysis will not require ethical approval as it will use data collected from previously published primary studies. The findings of this review will be published in peer-reviewed journals and widely disseminated.

PROSPERO registration number CRD42021275044.

Keywords Suicide, Telemedicine, Preventive Medicine.

STRENGTHS AND LIMITATIONS OF THE STUDY

- To the best of our knowledge, this study will be the first systematic review and meta-analysis about efficacy and effectiveness of remote suicide prevention strategies implemented through technology-based synchronous interventions.
- Randomized controlled studies and observational studies will be included to obtain sufficient data and adequate statistical power for meta-analysis.
- Study screening, quality assessment and data extraction will be reported according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P), to maximise transparency, accuracy, and significance.
- There is a potential limitation attributed to the expected small sample size of included studies and the heterogeneity of the study designs.

INTRODUCTION

Suicide is a universal, complex, and multifaceted public health problem which is among the leading causes of preventable death worldwide. More than 700,000 people die by suicide each year [1], becoming the seventeenth leading cause of death in 2019 [2]. Annual numbers of completed suicide account for 1.4% of all deaths worldwide [3]. For each completed suicide, there are twenty suicide attempts [4], constituting one of the leading causes of disease burden in the world [5, 6]. Moreover, suicide is one of the leading causes of death among young people [3], representing the fourth leading cause of death among people aged 15-29 years [1]. The number of adolescent deaths due to suicide has increased dramatically, with data reflecting that suicide represents a rate of 0.19/100,000 in people under 15 years of age and a rate of 2.23/100,000 in the 15-19 age group [7].

Suicide prevention is an emerging priority for the public health system due to its high social burden [8]. Evidence suggests that an increased risk of recidivism is directly related to a previous history of suicidal behaviour [9, 10]. It is estimated that 20% of people who had

1
2
3 engaged in suicidal behaviour showed a subsequent episode, and that 88% of these reattempts
4
5 occurred within two years of the initial episode [11]. Furthermore, lack of follow-up care
6
7 provided by healthcare professionals has been identified as a risk factor for repeat suicide
8
9 attempts in patients discharged from the emergency department (ED) [12].
10
11

12 Over the last decades, the relevance of developing evidence-based prevention
13
14 strategies focused on reducing the likelihood of suicide attempts in high-risk patients has
15
16 become evident [13–16]. Suicide prevention programmes include a wide range of follow-up
17
18 actions that promote connectivity between the patient and the mental health provider (sending
19
20 letters, conducting telephone calls, texting via SMS, providing follow-up visits in specialised
21
22 healthcare centres, or implementing 24/7 hotlines) [17, 18]. The development of Information
23
24 and Communication Technologies (ICTs) has created opportunities and challenges in prevention,
25
26 research, and clinical practice. eHealth interventions represent tools that allow reaching a larger
27
28 number of at-risk populations, facilitating proactive follow-up compared to face-to-face
29
30 treatments [19].
31
32
33

34 Considering that remotely delivered distance-based programmes can reach affected
35
36 people regardless of their location, it is reasonable to expect that these interventions could be
37
38 part of future suicide prevention efforts [17, 18]. Remotely brief contact-based interventions
39
40 can be a cost-effective strategy for suicide prevention in healthcare settings [20–22]. In a recent
41
42 meta-analysis, Inagaki et al. [12] found that secondary prevention programmes involving active
43
44 contact and follow-up can be effective in reducing the risk of a repeat suicide attempt within six
45
46 months of admission to an ED for suicidal behaviour. Moreover, promising results seem to be
47
48 reported in studies that conduct telephone follow-up interventions for individuals at risk as a
49
50 suicide prevention strategy [23–30]. Telephone management in a clinical-practice setting could
51
52 be a useful and not expensive programme to implement in mental health centres [23, 31].
53
54
55

56 In 2015, Milner et al. [32] conducted a systematic review and meta-analyses of 14
57
58 randomized controlled trials (RCTs) using brief contact interventions and found that
59
60

1
2
3 considerable differences in outcomes are likely to exist depending on the intervention condition
4 and time period over which the study was conducted (i.e., studies that reported on the
5 effectiveness of the intervention condition in reducing suicide attempts were conducted a some
6 decades ago and were rated as having a high risk of bias (RoB), whereas recent studies find more
7 conservative results). Given the possible benefits, low cost and unlikely adverse effects, large-
8 scale trials in clinical populations would be worthwhile; however, the authors do not
9 recommend widespread clinical implementation of brief contact interventions. Also in 2015,
10 Noh et al. [33] examined five RCTs comparing telephone-delivered interventions for preventing
11 suicide reattempts with no telephone intervention. The results suggest that, in the case of
12 providing telephone-delivered intervention only, more aggressive, structured, and theory-based
13 telephone interventions led by mental health professionals should be designed and examined
14 in the form of large-scale RCTs.

15
16 Although there is no clear consensus on the effect of these programmes in previous
17 systematic reviews and meta-analyses [32, 33], there are data that appear to support the
18 efficacy of providing active contact to individuals who have made a suicide attempt [12, 17, 34].

19
20 Overall, there are studies with positive results in the reduction of suicide-related
21 outcomes [23, 26, 29, 30] and others that have found conflicting or inconclusive evidence [25,
22 35, 36], suggesting the suitability of conducting a systematic review with meta-analysis of the
23 current scientific literature. Despite evidence describing a broad range of telecommunications-
24 based suicide prevention approaches [21, 37], we are not aware of available publications that
25 provide a synthesis of the literature on interventions that develop the use of synchronous
26 strategies in suicide prevention. Based on the concept of connectivity [34], combined with a
27 component of immediacy in the communication system; synchronous communication can
28 increase accessibility, adherence, and treatment efficacy.

29
30 This study aims to collect and synthesize information on the efficacy and effectiveness
31 of remote suicide prevention strategies implemented through technology-based synchronous
32

1
2
3 interventions (i.e., via digital tools that allow interactive and immediate real-time
4
5 communication conducted remotely).
6
7
8
9

10 **METHODS AND ANALYSIS**

11
12 The primary source used to describe the methods of this protocol was the Cochrane Handbook
13
14 for Systematic Reviews of Interventions (version 6.2) [39], specifically Part 2: Core methods
15
16 “Chapter 2: Determining the scope of the review and the questions it will address” to “Chapter
17
18 10: Analysing data and undertaking meta-analyses”. The protocol was constructed according to
19
20 the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P)
21
22 [40, 41] (see Supplementary File 1). A version of the protocol was registered in the International
23
24 Prospective Register of Systematic Reviews (PROSPERO), under identification number
25
26 CRD42021275044.
27
28
29
30
31

32 **Systematic review question**

33
34 The research question was built according to PICOS criteria (Population, Intervention,
35
36 Comparison, Outcomes, and deSign) [38]. In adolescents and adults (≥ 12 years of age) with
37
38 suicidal ideation or prior suicide attempts (P), what is the efficacy and effectiveness of
39
40 synchronous remote-based interventions (I) in the prevention of non-fatal suicide attempts and
41
42 completed suicide (O) compared to actives or inactives control groups (C), with any follow-up
43
44 length?
45
46
47
48
49

50 **Criteria for included and excluded studies**

51 **Types of studies**

52
53 The review will consider published empirical research with the following study designs:
54
55 randomized clinical trial, quasi-experimental trials, and observational case-controlled studies.
56
57
58
59
60

1
2
3 Primary data from cohort study designs or qualitative studies and secondary sources (e.g.,
4
5 systematic reviews, meta-analyses) will be excluded.
6
7
8
9

10 Types of participants

11 The population of interest will include adolescents and adults, defined as anyone over the age
12
13 of 12 years, that reported suicidal ideation or prior suicide attempts. No restriction will be placed
14
15 on gender, geographical provenance, or diagnosis. Participants with non-suicidal self-injury will
16
17 be excluded.
18
19

20 Types of interventions

21
22
23 Synchronous remote-based interventions will be defined as programmes delivered through a
24
25 technology device that is featured by (a) ensuring interactive and immediate communication,
26
27 and (b) not requiring the patient to be at the same physical location as the mental health
28
29 provider. Interventions should aim to reduce suicide risk by communicating with patients
30
31 through telephone follow-up or active contact (i.e., contact to healthcare services made
32
33 spontaneously by participants at elevated risk for suicidal behaviour, such as phone call or
34
35 hotline, instant text messaging, or videoconference. The synchronous remote communication
36
37 should include some, but not necessarily all, of the following elements: improving compliance
38
39 with medication and follow-up appointments, addressing any problems, stressors, or risk
40
41 factors, and reducing re-attempts. No restriction will be placed on the intensity or duration of
42
43 the intervention.
44
45
46
47
48
49

50 We will include interventions delivered via remote-communication synchronous
51
52 technologies only or multicomponent interventions, employing minimal face-to-face contact
53
54 (one session) or multimedia-delivered materials. Studies using asynchronous
55
56 telecommunication devices such online forums and communities, social networking sites/apps,
57
58 video sharing sites, automated one-way text or voice messages, and self-directed web-based
59
60

1
2
3 programmes will be excluded. Studies that describe treatments focused on the prevention of
4 non-suicidal self-harm will be excluded. In addition, the interventions for issues such as
5 psychosis, eating disorders, and depression, which are not intending to specifically address
6 suicidal behaviour, are out of the scope of this review.
7
8
9
10

11 All comparisons identified in the eligible studies will be included, such as treatment as
12 usual (TAU), enhanced treatment as usual, no treatment, placebo, waiting list, and historical
13 control. Therefore, the review will include active (i.e., participants engaged in some tasks
14 unrelated to suicide prevention during the study period) or inactive control groups. The control
15 group or time frame may involve a combination of strategies: visits to mental health services,
16 non-psychological therapies (e.g., pharmacotherapy), and other expected interventions. Studies
17 that do not include a control group will be excluded (e.g., cross-sectional trials).
18
19
20
21
22
23
24
25
26
27
28
29

30 Types of outcomes measures

31 The main outcomes will be the repetition of suicide attempt, suicide ideation and complete
32 suicide. Suicide is defined as a self-inflicted and potentially injurious behaviour that is performed
33 as a deliberate method to die [42]. Suicide attempts are defined as self-inflicted harm with a
34 non-fatal outcome for which there is evidence, explicit or implicit, of the intention to die [3].
35 Furthermore, suicidal ideation is described by thoughts, ideas, or ruminations about the
36 possibility of ending one's life [43].
37
38
39
40
41
42
43
44

45 The assessment can be conducted at any time (baseline, during, and after the
46 intervention) with no limit on the length of follow-up, employing quantitative measurement of
47 suicidal-related outcomes. The suicidal ideation outcome may be measured using different
48 validated instruments, such as the Columbia Suicide Severity Rating Scale (C-SSRS) [44]. The non-
49 fatal suicide attempts outcome will be measured by the number of suicides attempts a person
50 has made within a certain timeframe. The suicide death outcome will be measured by the count
51 of the number of people who have died by suicide.
52
53
54
55
56
57
58
59
60

Data collection and analysis

Information sources and search strategy

Literature searches will be conducted in the following electronic databases: PubMed (by NCBI-NLM-NIH website), PsycInfo (by ProQuest), Scopus (by [ww.scopus.com](http://www.scopus.com)), and Web of Science Core Collection (by www.clarivate.com). Grey literature and unpublished records will be searched on the following websites: ClinicalTrials.gov and Google Scholar.

Authors of published articles will be contacted to retrieve relevant information about their study that was either not reported or unclear. The references cited in the included articles will be considered for data collection. We will also examine the reference lists of existing systematic reviews on similar topics to identify other relevant articles. In addition, the personnel files of the workgroup members will be checked and experts in the field of suicide will be consulted regarding relevant publications.

The search strategy will be performed using relevant subject headings and search syntax appropriate to each database, including variations and combinations of free-text terms and Thesaurus of psychological index terms (American Psychological Association, APA) or Medical Subject Headings (MeSH) terms, combining with appropriate boolean operators. The general structure of search syntax was: (suicid* OR self-injur* OR self-harm OR "self-destructive behavio*" OR self-poisoning) AND (intervention OR therap* OR treatment OR psychotherap* OR prevention OR follow-up OR contact OR post-discharge) AND (synchron* OR remote OR non-presential OR non-face-to-face OR distance OR digital OR online OR telehealth OR telemedicine OR eHealth OR mHealth OR telephone OR phone OR call OR hotline OR helpline OR "suicide line" OR chat OR videoconferen* OR App OR text messag* OR SMS) AND ("randomized controlled trial" OR "controlled clinical trials" OR "clinical studies") NOT (review OR protocol). The drafted electronic search strategy for PubMed database is included in the Supplementary File 2.

1
2
3 The search is scheduled to be completed by April 2023. All searches will be re-run,
4
5 before publication of the article, if more than 12 months have elapsed since the date of the
6
7 initial search. The search will be limited to English or Spanish language, performed with no
8
9 restrictions on the time of publication.
10

11
12 The search strategy was developed by the research team with the collaboration of an
13
14 experienced health science librarian (GC) adhering to the Peer Review of Electronic Search
15
16 Strategies (PRESS) [45]. Sensitivity and specificity criteria were considered; however, sensitivity
17
18 was prioritised.
19

20 21 22 23 Data management

24
25 Results from the literature search will be imported into Rayyan Systems Inc. [46], an Internet-
26
27 based software programme that facilitates collaboration and pursuit accelerated screening
28
29 process. During the review process, this tool will be used to identify duplicate records and to
30
31 extract and manage the data. Mendeley (version 1.19.8) will be employed as a reference
32
33 management software.
34
35

36 37 38 39 Selection process

40
41 In the first phase, duplicate articles in the databases will be automatically removed by Rayyan
42
43 Systems Inc. and manually by the first reviewer (LC). In the second phase, two authors (LC and
44
45 MPJ) will blind-screen all articles based on titles, abstracts, and keywords. In the third phase,
46
47 the two reviewers (LC and MPJ) will independently evaluate the full-texts articles according to
48
49 eligibility criteria. The reasons for excluding articles will be recorded. If necessary, a third
50
51 reviewer (AS) will be requested for discrepancies that may not be resolved by consensus of the
52
53 two reviewers (LC and MPJ). Inter-rater agreement will be calculated by Cohen's Kappa in the
54
55 second and third phases, prior to reaching consensus on the discrepancies between the two
56
57
58
59
60

1
2
3 reviewers or contrasting them with a third reviewer. The article selection process will be
4
5 described in a PRISMA flow diagram [47].
6
7
8
9

10 Data collection process

11
12 Data extraction will be conducted independently by two authors (LC and MPJ), using a standard
13
14 extraction form in line with the template from The Cochrane Collaboration [48]. Data will be
15
16 managed using Microsoft Excel (16.56 version). Inter-rater agreement will be calculated by
17
18 Cohen's Kappa. Disagreements will be resolved by consensus, and unresolved disagreements
19
20 will be adjudicated by a third reviewer (AS). For missing information or data that needs to be
21
22 clarified, first or corresponding authors of primary studies will be contacted by email; one
23
24 follow-up email will be sent if no response is received to the first email. To ensure consistency
25
26 across reviewers, training exercises will be conducted before starting the data extraction
27
28 process.
29
30
31
32
33

34 Data items

35
36 Data will be extracted from the following categories: a) general characteristics of the study
37
38 (authors, date of publication, setting and geographic location, research design, sample size,
39
40 participant sociodemographic and baseline characteristics), b) intervention and control group
41
42 details (type of intervention or control group, sample sizes, follow-up time, dropout rates), c)
43
44 outcomes (descriptive and comparative statistical indexes of efficacy and effectiveness,
45
46 assessment measures and procedures), and d) limitations reported by study authors.
47
48
49
50
51

52 Risk of bias assessment

53
54 The RoB assessment will be conducted independently by two reviewers (LC and MPJ), employing
55
56 the Revised Cochrane risk-of-bias tool for randomised trials (RoB 2.0) [49], and Risk-of-bias In
57
58 Non-randomized Studies – of Interventions (ROBINS-I) [50].
59
60

1
2
3 Inter-rater agreement will be calculated by Cohen's Kappa. Disagreements will be
4 resolved by consensus with a third blind reviewer (AS). Ratings of bias for each study will be
5 classified as low, high, or unclear RoB, according to standardised methodology. Intra-
6 methodological quality evaluation will be synthesised in tables that will comprise the summary
7 of each study individually, identifying their RoB. Studies will not be excluded based on their level
8 of RoB.
9
10
11
12
13
14
15
16
17
18

19 **Data synthesis**

20 A descriptive summary and explanation of the characteristics and findings of all included studies
21 will be displayed in a comprehensive table. A narrative synthesis will be conducted, and a
22 random-effects meta-analysis will be computed when a suicidal-related outcome is reported in
23 at least three studies.
24
25
26
27
28
29

30 Mean differences between control group and intervention group will be transformed to
31 Hedges' g standardized effect sizes [51]. Effect sizes will be considered small ($g \geq 0.2$), medium
32 ($g \geq 0.5$), or large ($g \geq 0.8$) [52]. The Q and Tau^2 statistics will be calculated to assess for statistical
33 heterogeneity of effect sizes. Specific functions will be used to examine: (a) the profile likelihood
34 plots of the variance components; (b) the potential outlying and influential studies and/or
35 outcomes; and (c) the potential publication bias. All analyses will be performed using the
36 Metafor package (version 4.0-0) for R.
37
38
39
40
41
42
43
44
45
46
47

48 **Sensitivity analysis**

49 The potential effect on the results due to the research design and the RoB of the studies will be
50 analysed.
51
52
53
54
55

56 **Analysis of subgroups or subsets**

1
2
3 Subgroup and subsets analyses will be carried out if feasible and warranted, to examine
4 potential effects modifiers based on sociodemographic characteristics of participants, length,
5 and type of treatment. Meta-regression will be performed to analyse quantitative potential
6 effect modifiers or covariates that might influence the size of intervention effect (e.g., age). We
7 plan to summarise and categorise the below subgroups or subsets analyses if there is enough
8 data:
9
10
11
12
13
14
15

- 16 a) Age: adolescents (12 to 17 years of age), adults (18 to 65 years of age), and older adults
17 (over 65 years of age).
- 18 b) Type of intervention: type of synchronous remote-based interventions (telephone calls,
19 instant text messaging, 24/7 hotlines, videoconferencing).
- 20 c) Number of follow-up contacts: hotline (24-hour consultation with a non-standardized
21 number of follow-up contacts), 1 to 3 contacts, 3 to 6 contacts, and more than 6
22 contacts.
- 23 d) Length of contact period: hotlines (24-hour consultation with a non-standardized period
24 of follow-up contacts), up to 1-month follow-up, 1 to 3-month follow-up, 3 to 6-month
25 follow-up, and longer than 6-month follow-up.

40 41 **Publication bias**

42
43 Publication bias will be evaluated using Egger's test [53] and funnel plots [54] if ≥ 10 studies are
44 available.
45
46
47
48
49

50 51 **Confidence in cumulative evidence**

52 The overall quality of evidence will be evaluated according to the Grading of Recommendations
53 Assessment, Development, and Evaluation (GRADE) [55, 56] by two independent researchers
54 (LC and MPJ). Discrepancies will be resolved in a discussion with a third researcher (AS).
55
56
57
58
59
60

DISCUSSION

The wide variety of remotely delivered distance-based programmes for suicide prevention [20, 23, 26–28] and the current lack of guidance on their implementation warrants further research to improve and standardise patient care.

To the best of the researchers' knowledge, no systematic review and meta-analysis has been reported that examined the efficacy of synchronous and remote telepsychiatry interventions, assessing suicide-specific outcomes. We aim to address a gap in research by examining the efficacy of synchronous remote-based interventions that are specifically designed for suicide prevention. The proposed approach is pertinent given the recent increase in the development and usage of technology communication devices for this purpose [19].

It has been anticipated that the systematic review has predicted limitations that should be considered. The inconsistency of terms used in suicidology is a limiting factor regarding the search for articles and the subsequent eligibility of studies. In addition, suicide is a rare event, making the design of studies with high statistical power particularly challenging. Furthermore, people who attempt suicide are typified by poor treatment-seeking and limited adherence to treatment [57], making it important to provide individuals at risk of suicide with appropriate and cost-effectiveness treatment options.

A limited number of available studies is expected; this explains why the search strategy has prioritised sensitivity over specificity. Moreover, RCTs may not provide sufficient evidence to exclude data from non-randomised studies. The inclusion of studies examining a wide range of remote-communication synchronous technologies rather than a specific intervention is intended to address this issue. Similarly, including no restriction on the mental health condition should allow for the collection of comprehensive and relevant data. Research studies that meet eligibility criteria may have a substantial degree of heterogeneity. In response, we initially planned subgroups and subsets analyses. However, the categorisation of interventions into

1
2
3 different typologies may be difficult since multiple research studies combine several
4
5 interventions simultaneously.
6

7
8 Aside from several limitations, there are potential strengths. The objective is
9
10 contributed to the body of evidence on suicide. The expected results will provide guidance for
11
12 further research, contributing to globally suicide prevention efforts.
13

14
15 The current registration of the protocol for this review at PROSPERO may undergo
16
17 changes, approved by all authors. Any changes to the protocol will be described and explained
18
19 in the final manuscript.
20

21 22 23 **ETHICS AND DISSEMINATION**

24
25 Ethics approval is not needed as systematic review is based on published studies. The results
26
27 will be disseminated through peer-reviewed publications.
28
29

30 31 32 **Ethics statements**

33
34 Patient consent for publication

35
36 Not applicable.
37
38
39

40
41 **Contributors** AS is the guarantor. LC, JML, DP, AC, and AS: Writing - Original Draft. LC, AS, MPJ,
42
43 JPS, and CM: Software. LC, JML, DP and AS: Project administration, Supervision. All authors:
44
45 Conceptualization, Methodology, Writing - Review & Editing. JML, AS, JPS, and CM provided
46
47 statistical expertise. DP and AC provided expertise on suicidal behaviours. All authors approved
48
49 the final manuscript.
50
51

52
53
54 **Acknowledgements** Authors' thanks Guillem Cebrián (GC), director of the Library Hospital
55
56 Universitari Parc Taulí and head of the Unitat de Gestió del Coneixement de l'Institut
57
58 d'Investigació i Innovació Parc Taulí (I3PT), for his invaluable support in the refinement of the
59
60

1

1
2
3 search strategies. Authors' gratitude goes to Universitat Autònoma de Barcelona and Hospital
4
5 Universitari Parc Taulí for critically analysing the study proposal and motivational support to
6
7 conduct this protocol. DP thanks the support of Spanish Ministry of Science and
8
9 Innovation/ISCIII/FEDER (PI21/01148); the Secretaria d'Universitats i Recerca del Departament
10
11 d'Economia i Coneixement of the Generalitat de Catalunya (2021 SGR 01431); the CERCA
12
13 program of the I3PT; the Instituto de Salud Carlos III; and the CIBER of Mental Health
14
15 (CIBERSAM). The research has been previously presented at a conference and has been
16
17 published as a conference abstract [58].
18
19
20
21
22

23 **Funding** This research was funded by Instituto de Salud Carlos III, Subdirección General de
24
25 Evaluación y Fomento de la Investigación (ISCIII) and Fondo Europeo de Desarrollo Regional
26
27 (FEDER), grant number PI21/01148 - Estudio de la relación entre cognición social y dolor
28
29 psicológico con el riesgo de presentar conductas suicidas (COGNISUI) - Fundación Parc Taulí. The
30
31 APC was funded by Instituto de Salud Carlos III, Subdirección General de Evaluación y Fomento
32
33 de la Investigación (ISCIII) and Fondo Europeo de Desarrollo Regional (FEDER). The funders had
34
35 no role in the design of the study; in the collection, analyses, or interpretation of data; in the
36
37 writing of the manuscript; or in the decision to publish the results. The Department of Mental
38
39 Health of Hospital Universitari Parc Taulí, Unitat Mixta de Neurociència Traslacional I3PT-INC-
40
41 UAB, is the sponsor.
42
43
44
45
46
47

48 **Competing interests** D.P. has received grants and also served as consultant or advisor for Rovi,
49
50 Angelini, Janssen, Lundbeck and Servier. The other authors declare no conflict of interest.
51
52
53

54 **Patient and public involvement** Patients and/or the public were not involved in the design,
55
56 conduct, reporting, or dissemination plans of this research.
57
58
59
60

1
2
3 **Patient consent for publication** Not applicable.
4
5

6
7 **Provenance and peer review** Not commissioned; externally peer reviewed.
8
9

10
11 **Supplemental material** Supplementary File 1. PRISMA-P 2015 Checklist (DOCX 35 KB).
12
13

14 Supplementary File 2. PubMed search strategy (DOCX 14 KB)
15
16

17
18 **Open access** This is an open access article distributed in accordance with the Creative Commons
19 Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix,
20 adapt, build upon this work non-commercially, and license their derivative works on different
21 terms, provided the original work is properly cited, appropriate credit is given, any changes
22 made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.
23
24
25
26
27
28
29
30
31
32
33

34 **ORCID iDs**

35
36 Laura Comendador Vázquez <https://orcid.org/0000-0002-5221-4794>

37
38 María P. Jiménez-Villamizar <https://orcid.org/0000-0003-2264-7422>

39
40 Josep-Maria Losilla <https://orcid.org/0000-0002-5140-5847>

41
42 Juan P. Sanabria-Mazo <https://orcid.org/0000-0003-1688-435X>

43
44 Corel Mateo-Canedo <https://orcid.org/0000-0002-0620-9257>

45
46 Ana Isabel Cebrià Meca <https://orcid.org/0000-0002-2632-8130>

47
48 Antoni Sanz Ruíz <https://orcid.org/0000-0002-7952-4477>

49
50 Diego J. Palao Vidal <https://orcid.org/0000-0002-3323-6568>
51
52
53

54 **REFERENCES**

55
56
57
58
59
60

- 1
2
3 1. World Health Organization. Suicide. 2021. Available: [https://www.who.int/news-](https://www.who.int/news-room/fact-sheets/detail/suicide)
4 [room/fact-sheets/detail/suicide](https://www.who.int/news-room/fact-sheets/detail/suicide)
5
- 6
7 2. World Health Organization. Suicide worldwide in 2019. 2021. Available:
8 <https://www.who.int/publications-detail-redirect/9789240026643>
9
- 10
11 3. World Health Organization. Suicide in the world: Global health estimates. 2019. Available:
12 <https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3->
13 [eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3-eng.pdf?sequence=1&isAllowed=y)
14
15
- 16
17 4. Artieda-Urrutia P, Parra-Urbe I, Garcia-Pares G, *et al.* Management of suicidal behaviour: Is
18 the world upside down? *Aust N Z J Psychiatry* 2014;48:399–401.
19 <https://doi.org/10.1177/0004867414525847>
20
21
- 22
23 5. Mokdad AH, Forouzanfar MH, Daoud F, *et al.* Global burden of diseases, injuries, and risk
24 factors for young people’s health during 1990–2013: A systematic analysis for the Global
25 Burden of Disease Study 2013. *Lancet* 2016;387:2383–401. <https://doi.org/10.1016/S0140->
26 [6736\(16\)00648-6](https://doi.org/10.1016/S0140-6736(16)00648-6)
27
28
- 29
30 6. Parra-Urbe I, Blasco-Fontecilla H, García-Parés G, *et al.* Attempted and completed suicide:
31 Not what we expected? *J Affect Disord* 2013;150:840–6.
32 <https://doi.org/10.1016/j.jad.2013.03.013>
33
34
- 35
36 7. Instituto Nacional de Estadística. Defunciones según la causa de muerte 2017. 2021.
37 Available: <https://www.ine.es/jaxi/Datos.htm?path=/t15/p417/a2017/l0/&file=05008.px>
38
39
- 40
41 8. Zalsman G, Hawton K, Wasserman D, *et al.* Evidence-based national suicide prevention
42 taskforce in Europe: A consensus position paper. *Eur Neuropsychopharmacol* 2017;27:418–
43 21. <https://doi.org/10.1016/j.euroneuro.2017.01.012>
44
45
- 46
47 9. Olfson M, Wall M, Wang S, *et al.* Suicide following deliberate self-harm. *Am J Psychiat*
48 2017;174:765–74. <https://doi.org/10.1176/appi.ajp.2017.16111288>
49
50
- 51
52 10. Shand F, Vogl L, Robinson J. Improving patient care after a suicide attempt. *Australas*
53 *Psychiatry* 2018;26:145–8. <https://doi.org/10.1177/1039856218758560>
54
55
56
57
58
59
60

- 1
2
3 11. Parra-Uribe I, Blasco-Fontecilla H, Garcia-Parés G, *et al*. Risk of re-attempts and suicide death
4 after a suicide attempt: A survival analysis. *BMC Psychiatry* 2017;17:163.
5
6 <https://doi.org/10.1186/s12888-017-1317-z>
7
8
- 9
10 12. Inagaki M, Kawashima Y, Yonemoto N, *et al*. Active contact and follow-up interventions to
11 prevent repeat suicide attempts during high-risk periods among patients admitted to
12 emergency departments for suicidal behavior: A systematic review and meta-analysis. *BMC*
13 *Psychiatry* 2019;19:44. <https://doi.org/10.1186/s12888-019-2017-7>
14
15
16
- 17 13. Ganz D, Braquehais MD, Sher L. Secondary Prevention of Suicide. *PLoS Med*
18 2010;7:e1000271. <https://doi.org/10.1371/journal.pmed.1000271>
19
20
21
- 22 14. World Health Organization. The European Mental Health Action Plan 2013–2020. 2013.
23 Available: [https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf)
24 [Mental-Health-Acion-Plan-2013-2020.pdf](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf)
25
26
27
- 28 15. World Health Organization. Preventing suicide: A global imperative. 2014. Available:
29 https://www.who.int/mental_health/suicide-prevention/exe_summary_english.pdf?ua=1
30
31
32
- 33 16. World Health Organization. Comprehensive mental health action plan 2013–2030. 2021.
34 Available: <https://apps.who.int/iris/rest/bitstreams/1371507/retrieve>
35
36
37
- 38 17. Inagaki M, Kawashima Y, Kawanishi C, *et al*. Interventions to prevent repeat suicidal
39 behavior in patients admitted to an emergency department for a suicide attempt: A meta-
40 analysis. *J Affect Disord* 2015;175:66–78. <https://doi.org/10.1016/j.jad.2014.12.048>
41
42
43
- 44 18. Zalsman G, Hawton K, Wasserman D, *et al*. Suicide prevention strategies revisited: 10-year
45 systematic review. *Lancet Psychiatry* 2016;3:646–59. [https://doi.org/10.1016/S2215-](https://doi.org/10.1016/S2215-0366(16)30030-X)
46 [0366\(16\)30030-X](https://doi.org/10.1016/S2215-0366(16)30030-X)
47
48
49
- 50 19. Lin T, Stone SJ, Heckman TG, *et al*. Zoom-in to zone-out: Therapists report less therapeutic
51 skill in telepsychology versus face-to-face therapy during the COVID-19 pandemic.
52 *Psychotherapy* 2021;58:449. <http://dx.doi.org/10.1037/pst0000398>
53
54
55
56
57
58
59
60

- 1
2
3 20. Gilat I, Shahar G. Emotional first aid for a suicide crisis: Comparison between telephonic
4 hotline and Internet. *Psychiatry-Interpers Biol Process* 2007;70:12–8.
5
6 <https://doi.org/10.1521/psyc.2007.70.1.12>
7
8
9
10 21. Seong JM, Cho Y, Cho GC, *et al.* Effects of mobile messenger counseling on case management
11 success for individuals engaging in self-harm or suicide attempts who were discharged from
12 emergency departments. *Clin Exp Emerg Med* 2021;8:48–54.
13
14 <https://doi.org/10.15441/CEEM.20.133>
15
16
17
18 22. Vijayakumar L, Umamaheswari C, Shujaath Ali Z, *et al.* Intervention for suicide attempters:
19 A randomized controlled study. *Indian J Psychiatry* 2011;53:244–8.
20
21 <https://doi.org/10.4103/0019-5545.86817>
22
23
24
25 23. Cebrià AI, Parra I, Pàmias M, *et al.* Effectiveness of a telephone management programme
26 for patients discharged from an emergency department after a suicide attempt: Controlled
27 study in a Spanish population. *J Affect Disord* 2013;147:269–76.
28
29 <https://doi.org/10.1016/j.jad.2012.11.016>
30
31
32
33 24. Cedereke M, Monti K, Öjehagen A. Telephone contact with patients in the year after a
34 suicide attempt: Does it affect treatment attendance and outcome? A randomised
35 controlled study. *Eur Psychiat* 2002;17:82–91. [https://doi.org/10.1016/S0924-](https://doi.org/10.1016/S0924-9338(02)00632-6)
36
37 [9338\(02\)00632-6](https://doi.org/10.1016/S0924-9338(02)00632-6)
38
39
40
41
42 25. De Leo D, Buono MD, Dwyer J. Suicide among the elderly: The long-term impact of a
43 telephone support and assessment intervention in northern Italy. *Br J Psychiatry*
44 2002;181:226–9. <https://doi.org/10.1192/bjp.181.3.226>
45
46
47
48
49 26. Fleischmann A, Bertolote JM, Wasserman D, *et al.* Effectiveness of brief intervention and
50 contact for suicide attempters: A randomized controlled trial in five countries. *Bull World*
51
52 *Health Organ* 2008;86:703–9. <https://doi.org/10.2471/BLT.07.046995>
53
54
55
56
57
58
59
60

- 1
2
3 27. Gould MS, Munfakh JLH, Kleinman M, *et al.* National Suicide Prevention Lifeline: Enhancing
4 mental health care for suicidal individuals and other people in crisis. *Suicide Life-Threat*
5 *Behav* 2012;42:22–35. <https://doi.org/10.1111/j.1943-278X.2011.00068.x>
6
7
8
9
10 28. Miller IW, Camargo CA, Arias SA, *et al.* Suicide prevention in an emergency department
11 population: The ED-SAFE study. *JAMA Psychiatry* 2017;74:563-70.
12 <https://doi.org/10.1001/jamapsychiatry.2017.0678>
13
14
15
16 29. Mousavi S, Zohreh R, Sharbafchi M, *et al.* The efficacy of telephonic follow up in prevention
17 of suicidal reattempt in patients with suicide attempt history. *Adv Biomed Res* 2014;3:198.
18 <https://doi.org/10.4103/2277-9175.142043>
19
20
21
22
23 30. Vaiva G, Ducrocq F, Meyer P, *et al.* Effect of telephone contact on further suicide attempts
24 in patients discharged from an emergency department: Randomised controlled study. *BMJ*
25 2006;332:1241–5. <https://doi.org/10.1136/bmj.332.7552.1241>
26
27
28
29
30 31. Cebrià AI, Pérez-Bonaventura I, Cuijpers P, *et al.* Telephone management program for
31 patients discharged from an emergency department after a suicide attempt. *Crisis*
32 2015;36:345–52. <https://doi.org/10.1027/0227-5910/a000331>
33
34
35
36
37 32. Milner AJ, Carter G, Pirkis J, *et al.* Letters, green cards, telephone calls and postcards:
38 Systematic and meta-analytic review of brief contact interventions for reducing self-harm,
39 suicide attempts and suicide. *Br J Psychiatry* 2015;206:184–90.
40 <https://doi.org/10.1192/bjp.bp.114.147819>
41
42
43
44
45 33. Noh D, Park YS, Oh EG. Effectiveness of telephone-delivered interventions following suicide
46 attempts: A systematic review. *Arch Psychiatr Nurs* 2016;30:114–9.
47 <https://doi.org/10.1016/j.apnu.2015.10.012>
48
49
50
51
52 34. Luxton DD, June JD, Comtois KA. Can postdischarge follow-up contacts prevent suicide and
53 suicidal behavior? A Review of the Evidence. *Crisis* 2013;34:32–41.
54 <https://doi.org/10.1027/0227-5910/a000158>
55
56
57
58
59
60

- 1
2
3 35. Bertolote JM, Fleischmann A, De Leo D, *et al.* Repetition of suicide attempts data from
4
5 emergency care settings in five culturally different low- and middle-income countries
6
7 participating in the WHO SUPRE-MISS study. *Crisis* 2010;31:194–201.
8
9 <https://doi.org/10.1027/0027-5910/a000052>
10
11
12 36. Mouaffak F, Marchand A, Castaigne E, *et al.* OSTA program: A French follow up intervention
13
14 program for suicide prevention. *Psychiatry Res* 2015;230:913–8.
15
16 <https://doi.org/10.1016/j.psychres.2015.11.024>
17
18
19 37. Krysinska KE, De Leo D. Telecommunication and suicide prevention: Hopes and challenges
20
21 for the new century. *Omega-J Death Dying* 2007;55:237–53.
22
23 <https://doi.org/10.2190/OM.55.3.e>
24
25
26 38. Saimbert M. Developing clinical questions for a systematic review. In: Holly C, Salmond S,
27
28 Saimbert M, eds. *Comprehensive Systematic Review for Advanced Practice Nursing*. 3rd ed.
29
30 United States: Springer Publishing Company; 2021. p. 85–101.
31
32 <https://doi.org/10.1891/9780826152268.0005>
33
34
35 39. Higgins JPT, Thomas J, Chandler J, *et al.* *Cochrane Handbook for Systematic Reviews of*
36
37 *Interventions* version 6.2. 2021. Available: <https://training.cochrane.org/handbook>
38
39
40 40. Moher D, Shamseer L, Clarke M, *et al.* Preferred reporting items for systematic review and
41
42 meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;4.
43
44 <https://doi.org/10.1186/2046-4053-4-1>
45
46
47 41. Shamseer L, Moher D, Clarke M, *et al.* Preferred reporting items for systematic review and
48
49 meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ*
50
51 2015;349:g7647–7. <https://doi.org/10.1136/bmj.g7647>
52
53
54 42. Gómez A, Silva H, Amon R. *El Suicidio. Teoría, Clínica y Manejo*. Barcelona: Editorial
55
56 Mediterráneo; 2018.
57
58 43. World Health Organization. ICD-11 for mortality and morbidity statistics. 2021. Available:
59
60 <https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/778734771>

- 1
2
3 44. Posner K, Brent D, Lucas C, *et al.* Columbia-Suicide Severity Rating Scale (C-SSRS). New York:
4
5 Columbia University Medical Center; 2008.
6
7
8 45. McGowan J, Sampson M, Salzwedel DM, *et al.* PRESS Peer Review of Electronic Search
9
10 Strategies: 2015 Guideline Statement. *J Clin Epidemiol* 2016;75:40–6.
11
12 <https://doi.org/10.1016/j.jclinepi.2016.01.021>
13
14 46. Ouzzani M, Hammady H, Fedorowicz Z, *et al.* Rayyan—a web and mobile app for systematic
15
16 reviews. *Syst Rev* 2016;5(1):1-10. <https://doi.org/10.1186/s13643-016-0384-4>
17
18
19 47. Moher D, Liberati A, Tetzlaff J, *et al.* Preferred reporting items for systematic reviews and
20
21 meta-analyses: The PRISMA statement. *Int J Surg* 2010;8:336–41.
22
23 <https://doi.org/10.1016/j.ijsu.2010.02.007>
24
25
26 48. The Cochrane Collaboration. Data collection form for intervention reviews for RCTs and non-
27
28 RCTs - template. 2019. Available: <https://dplp.cochrane.org/data-extraction-forms>
29
30
31 49. Sterne JA, Savović J, Page MJ, *et al.* RoB 2: A revised tool for assessing risk of bias in
32
33 randomised trials. *BMJ* 2019;366:l4898. <https://doi.org/10.1136/bmj.l4898>
34
35
36 50. Sterne JA, Hernán MA, Reeves BC, *et al.* ROBINS-I: A tool for assessing risk of bias in non-
37
38 randomised studies of interventions. *BMJ* 2016;366:i4919.
39
40 <https://doi.org/10.1136/bmj.i4919>
41
42 51. Hedges LV. Distribution Theory for Glass's Estimator of Effect Size and Related Estimators. *J.*
43
44 *Stat. Educ.* 1981;6:107-128. <https://doi.org/10.2307/1164588>
45
46
47 52. Cohen J. Statistical Power Analysis for the Behavioral Sciences. New York: Lawrence Erlbaum
48
49 Associates; 1988.
50
51 53. Egger M, Smith GD, Schneider M, *et al.* Bias in meta-analysis detected by a simple, graphical
52
53 test. *BMJ* 1997;315:629–34. <https://doi.org/10.1136/bmj.315.7109.629>
54
55
56 54. Liu JL. The role of the funnel plot in detecting publication and related biases in meta-analysis.
57
58 *Evid-Based Dent* 2011;12(4):121–2. <https://doi.org/10.1038/sj.ebd.6400831>
59
60

- 1
2
3 55. Schünemann H, Brożek J, Guyatt G, *et al*. GRADE Handbook for Grading Quality of Evidence
4
5 and Strength of Recommendations. 2013. Available:
6
7 <https://gdt.gradepro.org/app/handbook/handbook.html>
8
9
10 56. Ryan R, Hill S. How to GRADE the quality of the evidence. Cochrane Consumers and
11
12 Communication Group, Version 3.0. 2016. Available: [https://cccr.org/cochrane.org/author-](https://cccr.org/cochrane.org/author-resources)
13
14 [resources](https://cccr.org/cochrane.org/author-resources)
15
16 57. Bruffaerts R, Demyttenaere K, Hwang I, *et al*. Treatment of suicidal people around the world.
17
18 *Br J Psychiatry* 2011;199:64–70. <https://doi.org/10.1192/bjp.bp.110.084129>
19
20 58. Comendador L, Cebrià A, Sanz A, *et al*. Efficacy of synchronous remote-based interventions
21
22 for suicide prevention among adolescent and adult patients: A systematic review and meta-
23
24 analysis. *Eur Psychiatry* [Internet]. 2022;65:S295–6.
25
26 <http://dx.doi.org/10.1192/j.eurpsy.2022.754>
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1-2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	23
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	351-355
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	369-378
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	369-378
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	374-376
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	39-106
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	118-124
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for	<input checked="" type="checkbox"/>	<input type="checkbox"/>	126-181

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		eligibility for the review			207-210
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	183-194 207
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Supplementary File 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	216-221
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	223-233
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	235-244
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	246-252
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	168-181
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	254-268
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	268-269
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	270-276
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	278-298
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	266-269
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	300-302
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	304-307

Supplementary File 2. PubMed search strategy

Search strategy

("suicide"[MeSH Terms] OR suicid*[Title] OR "suicidal ideation"[MeSH Terms] OR "suicide ideation"[Title] OR "suicide, attempted"[MeSH Terms] OR "attempted suicide"[Title] OR "suicidal behavio*"[Title] OR "non-fatal attempt"[Title] OR "unsuccessful attempt"[Title] OR "suicide, completed"[MeSH Terms] OR "completed suicide"[Title] OR "fatal attempt"[Title] OR "self-injurious behavior"[MeSH Terms] OR self-injur*[Title] OR self-harm*[Title] OR "self-destructive behavio*"[Title] OR self-poisoning[Title] OR "repeated suicide"[Title] OR suicide-risk[Title])

AND ("treatment outcome"[MeSH Terms] OR treatment[Title/Abstract] OR therap*[Title/Abstract] OR intervention*[Title/Abstract] OR "crisis intervention"[MeSH Terms] OR prevention[Title/Abstract] OR "follow-up studies"[MeSH Terms] OR follow-up[Title/Abstract] OR contact*[Title/Abstract] OR management[Title/Abstract] OR program*[Title/Abstract] OR "psychotherapy, brief"[MeSH Terms] OR "brief psychotherap*"[Title/Abstract] OR "brief contact intervention*"[Title/Abstract] OR "post-discharge intervention*"[Title/Abstract] OR effectiv*[Title/Abstract] OR efficacy[Title/Abstract])

AND (synchron*[Title/Abstract] OR "online systems"[MeSH Terms] OR real-time[Title/Abstract] OR "immediate communication*"[Title/Abstract] OR "remote consultation"[MeSH Terms] OR remote*[Title/Abstract] OR non-presential[Title/Abstract] OR non-face-to-face[Title/Abstract] OR non-attend*[Title/Abstract] OR "distance counseling"[MeSH Terms] OR distance[Title/Abstract] OR digital[Title/Abstract] OR "telemedicine"[MeSH Terms] OR telemedicine[Title/Abstract] OR "telecommunications"[MeSH Terms] OR "telecommunication*"[Title/Abstract] OR telehealth[Title/Abstract] OR teleassistance[Title/Abstract] OR telepsychology[Title/Abstract] OR telepsychiatry[Title/Abstract] OR telecare[Title/Abstract] OR telemonitoring[Title/Abstract] OR teleconsult*[Title/Abstract] OR telecounsel*[Title/Abstract] OR "telemental health"[Title/Abstract] OR online[Title/Abstract] OR on-line[Title/Abstract] OR "information and communication technolog*"[Title/Abstract] OR ICT[Title/Abstract] OR e-therap*[Title/Abstract] OR "electronic therap*"[Title/Abstract] OR e-health[Title/Abstract] OR "electronic health"[Title/Abstract] OR m-health[Title/Abstract] OR "mobile health"[Title/Abstract] OR "telephone"[MeSH Terms] OR telephon*[Title/Abstract] OR "cell phone"[MeSH Terms] OR phone*[Title/Abstract] OR "phone call*"[Title/Abstract] OR call*[Title/Abstract] OR "telephone contact*"[Title/Abstract] OR "hotlines"[MeSH Terms] OR hotline*[Title/Abstract] OR "hot line service*"[Title/Abstract] OR "call centers"[MeSH Terms] OR helpline*[Title/Abstract] OR lifeline*[Title/Abstract] OR "suicide prevention lifeline"[Title/Abstract] OR "crisis line*"[Title/Abstract] OR video*[Title/Abstract] OR "videoconferencing"[MeSH Terms] OR video-call*[Title/Abstract] OR "clinical videoconferencing"[Title/Abstract] OR CVT[Title/Abstract] OR chat*[Title/Abstract] OR chatbot[Title/Abstract] OR "text messaging"[MeSH Terms] OR "text messaging"[Title/Abstract] OR "instant messag*"[Title/Abstract] OR SMS[Title/Abstract] OR "mobile applications"[MeSH Terms] OR "mobile application*"[Title/Abstract] OR App[Title/Abstract] OR "phone application*"[Title/Abstract])

AND ("randomized controlled trials as Topic"[Mesh] OR "randomized controlled trial"[Title/Abstract] OR "controlled clinical trials as Topic"[Mesh] OR "controlled clinical trial"[Title/Abstract] OR trial*[Title/Abstract] OR "clinical studies as Topic"[MeSH Terms] OR

1
2
3 "clinical stud*"[Title/Abstract] OR "random allocation"[MeSH Terms] OR
4 random*[Title/Abstract] OR "intervention group*"[Title/Abstract] OR "control
5 group*"[Title/Abstract]
6

7 NOT (systematic review*[Title] OR review*[Title] OR meta*[Title] OR protocol[Title])
8

9 **Filters**

10
11 The following filters were applied: text availability (Full text), article type (Clinical Study,
12 Clinical Trial, Controlled Clinical Trial, Randomized Controlled Trial, Journal Article), language
13 (English, Spanish), age (Adolescent: 13-18 years, Adult: 19+ years).
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

BMJ Open

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075116.R1
Article Type:	Protocol
Date Submitted by the Author:	05-Sep-2023
Complete List of Authors:	Comendador, Laura; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Jimenz Villamizar, Mara Paola; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Losilla, Josep-Maria; Autonomous University of Barcelona, Department of Psychobiology and Methodology of Health Science Area of Behavioral Science Methodology Sanabria-Mazo, Juan; Institut de Recerca Sant Joan de Déu; Autonomous University of Barcelona, Department of Basics Mateo Canedo, Corel; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Cebria, Ana Isabel ; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Sanz, Antoni; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Palao, Diego; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute
Primary Subject Heading:	Mental health
Secondary Subject Heading:	Public health
Keywords:	Suicide & self-harm < PSYCHIATRY, Telemedicine < BIOTECHNOLOGY & BIOINFORMATICS, PREVENTIVE MEDICINE

SCHOLARONE™
Manuscripts

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Laura Comendador^{1,2}, María P. Jiménez-Villamizar³, Josep-Maria Losilla⁴, Juan P. Sanabria-Mazo^{3,5}, Corel Mateo-Canedo³, Ana Isabel Cebrià^{2,6,7}, Antoni Sanz^{3,8}, Diego Palao^{1,2,7}

¹Department of Psychiatry and Forensic Medicine, Faculty of Medicine, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

²Unitat Mixta de Neurociència Traslacional I3PT-INc-UAB, Institut d'Investigació i Innovació Parc Taulí I3PT, Department of Mental Health, University Hospital Parc Taulí. 08208 Sabadell, Spain.

³Department of Basic, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁴Department of Psychobiology and Methodology of Health Sciences, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁵Teaching, Research & Innovation Unit, Parc Sanitari Sant Joan de Déu. 08830 Sant Boi de Llobregat, Spain.

⁶Department of Clinical and Health Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁷Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Instituto de Salud Carlos III. 28029 Madrid, Spain.

⁸Stress and Health Research Group (GIES). Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

Corresponding authors

Antoni Sanz, PhD

Department of Basics, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona.

Carrer de la Fortuna, s/n. Campus de Bellaterra, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès (Spain).

E-mail: antonio.sanz@uab.cat

Ana Isabel Cebrià, PhD

Unitat Mixta de Neurociència Traslacional I3PT-INc-UAB, Institut d'Investigació i Innovació Parc Taulí I3PT, Department of Mental Health, University Hospital Parc Taulí.

Parc Taulí, 1. 08208 Sabadell, Barcelona (Spain).

E-mail: acebria@tauli.cat

Author Note

Laura Comendador Vázquez, MSc. E-mail: laura.comendador@uab.cat

ORCID 0000-0002-5221-4794

María P. Jiménez-Villamizar, MSc. E-mail: mariapaola.jimenez@autonoma.cat

ORCID 0000-0003-2264-7422

Josep-Maria Losilla, PhD. E-mail: JosepMaria.Losilla@uab.cat

ORCID 0000-0002-5140-5847

Juan P. Sanabria-Mazo, MSc. E-mail: juanpablo.sanabria@sjd.es

ORCID 0000-0003-1688-435X

Corel Mateo-Canedo, MSc. E-mail: Corel.Mateo@uab.cat

ORCID 0000-0002-0620-9257

Ana Isabel Cebrià Meca, PhD. E-mail: acebria@tauli.cat

ORCID 0000-0002-2632-8130

Antoni Sanz Ruíz, PhD. E-mail: antonio.sanz@uab.cat

ORCID 0000-0002-7952-4477

Diego J. Palao Vidal, MD, PhD. E-mail: dpalao@tauli.cat

ORCID 0000-0002-3323-6568

Word count (excluding title page, abstract, tables, acknowledgements, contributions, and references): 3796 words

1 **The effect of synchronous remote-based interventions on suicidal behaviours:**

2 **Protocol for a systematic review and meta-analysis**

3 **ABSTRACT**

4 **Introduction** Suicide is among the leading causes of preventable death worldwide. The impact
5 of suicide affects the personal, social, and economic levels. Therefore, its prevention is a priority
6 for public health systems. Previous studies seem to support the efficacy of providing active
7 contact to people who have made a suicide attempt. The current systematic review and meta-
8 analysis aim to investigate the efficacy of distance suicide prevention strategies implemented
9 through synchronous technology-based interventions.

10 **Methods and analysis** This protocol is designed according to the Preferred Reporting Items for
11 Systematic Review and Meta-Analysis Protocols (PRISMA-P). The bibliographic searches were
12 conducted in the databases PubMed, PsycInfo, Scopus, and Web of Science in April 2022, with
13 no restrictions on the time of publication and limited to publications in English or Spanish. The
14 search strategy was performed using free-text terms and Medical Subject Headings (MeSH)
15 terms: suicide, follow-up, synchronous, remote, telehealth, telephone, hotline,
16 videoconference, and text message. Two reviewers will independently conduct study screening,
17 selection process, data extraction, and risk of bias (RoB) assessment. The analysis and synthesis
18 of the results will be both qualitative and quantitative. A narrative synthesis, presented in a
19 comprehensive table, will be performed and meta-analysis will be conducted, as appropriate, if
20 sufficient data is provided.

21 **Ethics and dissemination** The present review and meta-analysis will not require ethical
22 approval, as it will use data collected from previously published primary studies. The findings of
23 this review will be published in peer-reviewed journals and widely disseminated.

24 **PROSPERO registration number** CRD42021275044.

25 **Keywords** Suicide, Telemedicine, Preventive Medicine.

26

27 STRENGTHS AND LIMITATIONS OF THE STUDY

- 28 • Study screening, quality assessment, and data extraction will be reported according to
29 the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols
30 (PRISMA-P) to maximise transparency, accuracy, and significance.
- 31 • The systematic review will focus on peer-reviewed articles, and findings will be limited
32 to articles written in English or Spanish.
- 33 • Randomised clinical trials, quasi-experimental trials, and observational case-controlled
34 studies will be included to obtain sufficient data and adequate statistical power for
35 meta-analysis.
- 36 • There is a potential limitation attributed to the expected small sample size of the
37 included studies and the heterogeneity of the study designs.

39 INTRODUCTION

40 Suicide is a universal, complex, and multifaceted public health problem that ranks annually
41 among the leading causes of preventable death worldwide. More than 700,000 people die by
42 suicide per year [1], becoming the seventeenth leading cause of death in 2019 in global
43 epidemiology [2]. Annual suicide rates account for 1.4% of all deaths worldwide [3]. Suicide rates
44 in European regions (10.5 per 100,000) were higher than the global average (9.0 per 100,000) in
45 2019, while the lowest suicide rate was in the Eastern Mediterranean region (6.4 per 100,000)
46 [2, 3]. For each suicide death, there are twenty suicide attempts [4], constituting one of the
47 leading causes of disease burden in the world [5, 6]. While most of the world's suicides occur in
48 low- and-middle-income countries, high-income countries have the highest age-standardised
49 suicide rate (10.9 per 100,000) [2, 3]. Moreover, suicide represents the fourth leading cause of
50 death among people aged 15-29 years in global epidemiology [1, 3]. The number of adolescent
51 deaths due to suicide has increased dramatically, with data reflecting that suicide represents a

1
2
3 52 rate per year of 0.19/100,000 in people under 15 years of age and a rate per year of
4
5 53 2.23/100,000 in the 15-19 age group, according to the Spanish National Institute of Statistics [7].
6
7

8 54 Suicide prevention is an emerging priority for the public health system due to its high
9
10 55 social burden [8]. Evidence suggests that a prior suicide attempt is one of the most important
11
12 56 risk factors for suicide, which supports the efforts to protect patients who attempt suicide during
13
14 57 the acute period following an episode of self-harm [9, 10]. It is estimated that 20% of people
15
16 58 who had engaged in suicidal behaviour showed a subsequent episode, and that 88% of these
17
18 59 reattempts occurred within two years of the initial episode [11]. Furthermore, a lack of follow-
19
20 60 up care provided by healthcare professionals has been identified as a risk factor for repeat
21
22 61 suicide attempts in patients discharged from the emergency department (ED) [12].
23
24

25 62 Over the last decades, the relevance of developing evidence-based prevention
26
27 63 strategies focused on reducing the likelihood of suicide attempts in high-risk patients has
28
29 64 become evident [13–16]. Suicide prevention programmes include a wide range of follow-up
30
31 65 actions that promote connectivity between the patient and the mental health provider (sending
32
33 66 letters, conducting telephone calls, texting via SMS, providing follow-up visits in specialised
34
35 67 healthcare centres, or implementing 24/7 hotlines) [17, 18]. The development of Information
36
37 68 and Communication Technologies (ICTs) has created opportunities and challenges in prevention,
38
39 69 research, and clinical practise. eHealth interventions represent tools that allow reaching a larger
40
41 70 number of at-risk populations, facilitating proactive follow-up compared to face-to-face
42
43 71 treatments [19].
44
45
46
47

48 72 Considering that remotely delivered distance-based programmes can reach affected
49
50 73 people regardless of their location, it is reasonable to expect that these interventions could be
51
52 74 part of future suicide prevention efforts [17, 18]. Remotely brief contact-based interventions
53
54 75 can be a cost-effective strategy for suicide prevention in healthcare settings [20–22]. In a recent
55
56 76 meta-analysis, Inagaki *et al.* [12] found that secondary prevention programmes involving active
57
58 77 contact and follow-up can be effective in reducing the risk of a repeat suicide attempt within six
59
60

1
2
3 78 months of admission to an ED for suicidal behaviour. Moreover, promising results seem to be
4
5 79 reported in studies that conduct telephone follow-up interventions for individuals at risk as a
6
7 80 suicide prevention strategy [23–30]. Telephone management in a clinical-practise setting could
8
9 81 be a useful and not expensive programme to implement in mental health centres [23, 31].

11
12 82 In 2015, Milner *et al.* [32] conducted a systematic review and meta-analyses of 14
13
14 83 randomised controlled trials (RCTs) using brief contact interventions and found that
15
16 84 considerable differences in outcomes are likely to exist depending on the intervention condition
17
18 85 and time period over which the study was conducted (i.e., studies that reported on the
19
20 86 effectiveness of the intervention condition in reducing suicide attempts were conducted some
21
22 87 decades ago and were rated as having a high risk of bias (RoB), whereas recent studies find more
23
24 88 conservative results). Given the possible benefits, low cost and unlikely adverse effects, large-
25
26 89 scale trials in clinical populations would be worthwhile; however, the authors do not
27
28 90 recommend widespread clinical implementation of brief contact interventions. In 2016, Noh *et al.*
29
30 91 [33] examined five RCTs comparing telephone-delivered interventions for preventing suicide
31
32 92 reattempts with no telephone intervention. The results suggest that, in the case of providing
33
34 93 telephone-delivered intervention only, more aggressive, structured, and theory-based
35
36 94 telephone interventions led by mental health professionals should be designed and examined
37
38 95 in the form of large-scale RCTs. It should be noted that there is an overlap in the studies included
39
40 96 in the Milner *et al.* [32] and Noh *et al.* [33] meta-analyses.

45 97 Although there is no clear consensus on the effect of these programmes in previous
46
47 98 systematic reviews and meta-analyses [32, 33], there are data that appear to support the
48
49 99 efficacy of providing active contact to individuals who have made a suicide attempt [12, 17, 34].

52 100 Overall, there are studies with positive results in the reduction of suicide-related outcomes [23,
53
54 101 26, 29, 30] and others that have found conflicting or inconclusive evidence [25, 35, 36],
55
56 102 suggesting the suitability of conducting a systematic review with meta-analysis of the current
57
58 103 scientific literature. Despite evidence describing a broad range of telecommunications-based
59
60

1
2
3 104 suicide prevention approaches [21, 37], we are not aware of any publications that provide a
4
5 105 synthesis of the literature on interventions that develop the use of synchronous strategies in
6
7 106 suicide prevention. Based on the concept of connectivity [34], combined with a component of
8
9 107 immediacy in the communication system; synchronous communication can increase
10
11 108 accessibility, adherence, and treatment efficacy.

12
13
14 109 This study aims to collect and synthesise information on the efficacy and effectiveness
15
16 110 of remote suicide prevention strategies implemented through technology-based synchronous
17
18 111 interventions (i.e., via digital tools that allow interactive and immediate real-time
19
20 112 communication conducted remotely).

21
22
23 113

24 114 **METHODS AND ANALYSIS**

25
26 115 The primary source used to describe the methods of this protocol was the Cochrane Handbook
27
28 116 for Systematic Reviews of Interventions (version 6.2) [38], specifically Part 2: Core methods
29
30 117 “Chapter 2: Determining the scope of the review and the questions it will address” to “Chapter
31
32 118 10: Analysing data and undertaking meta-analyses”. The protocol was constructed according to
33
34 119 the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P)
35
36 120 [39, 40] (see Supplementary File 1). A version of the protocol was registered in the International
37
38 121 Prospective Register of Systematic Reviews (PROSPERO), under identification number
39
40 122 CRD42021275044.

41
42
43 123

44 124 **Systematic review question**

45
46 125 The research question was built according to PICOS criteria (Population, Intervention,
47
48 126 Comparison, Outcomes, and deSign) [41]. In adolescents and adults (≥ 12 years of age) with
49
50 127 suicidal ideation or prior suicide attempts (P), what is the efficacy and effectiveness of
51
52 128 synchronous remote-based interventions (I) in the prevention of non-fatal suicide attempts and
53
54 129 suicide deaths (O) compared to active or inactive control groups (C) with any follow-up length?
55
56
57
58
59
60

1
2
3 1304
5 131 **Criteria for included and excluded studies**6
7 132 Types of studies8
9
10 133 The review will consider published empirical research with the following study designs:
11
12 134 randomised clinical trials, quasi-experimental trials, and observational case-controlled studies.13
14 135 Primary data from cohort study designs or qualitative studies and secondary sources (e.g.,
15
16 136 systematic reviews, meta-analyses) will be excluded.17
18
19 13720
21 138 Types of participants22
23 139 The population of interest will include adolescents and adults, defined as anyone over the age
24
25 140 of 12 years, who have reported suicidal ideation or prior suicide attempts. No restriction will be
26
27 141 placed on gender, geographical provenance, or diagnosis. Participants with non-suicidal self-
28
29 142 injury will be excluded.30
31
32 14333
34 144 Types of interventions35
36 145 Synchronous remote-based interventions will be defined as programmes delivered through a
37
38 146 technology device that is characterised by (a) ensuring interactive and immediate
39
40 147 communication, and (b) not requiring the patient to be at the same physical location as the
41
42 148 mental health provider. Interventions should aim to reduce suicide risk by communicating with
43
44 149 patients through telephone follow-up or active contact (i.e., contact with healthcare services
45
46 150 made spontaneously by participants at elevated risk for suicidal behaviour, such as a phone call
47
48 151 or hotline), instant text messaging, or videoconference. The synchronous remote
49
50 152 communication should include some, but not necessarily all, of the following elements:
51
52 153 improving compliance with medication and follow-up appointments, addressing any problems,
53
54 154 stressors, or risk factors, and reducing re-attempts. No restriction will be placed on the intensity
55
56 155 or duration of the intervention.
57
58
59
60

1
2
3 156 We will include interventions delivered via synchronous remote-communication
4
5 157 technologies; however, synchronous remote-based programmes that include minimal face-to-
6
7 158 face contact (i.e., in-person contact for a maximum of 1 session) or are complemented with
8
9 159 multimedia-delivered materials will be also considered. Studies using asynchronous
10
11 160 telecommunication devices such as online forums and communities, social networking sites,
12
13 161 video sharing sites, automated one-way text or voice messages, and self-directed web-based
14
15 162 programmes will be excluded. Studies that describe treatments focused on the prevention of
16
17 163 non-suicidal self-harm will be excluded. In addition, the interventions for issues such as
18
19 164 psychosis, eating disorders, and depression, which are not intended to specifically address
20
21 165 suicidal behaviour, are out of the scope of this review.
22
23
24

25 166 All comparisons identified in the eligible studies will be included, such as treatment as
26
27 167 usual (TAU), enhanced treatment as usual, no treatment, placebo, waiting list, and historical
28
29 168 control. Therefore, the review will include active (i.e., participants engaged in some tasks
30
31 169 unrelated to suicide prevention during the study period) or inactive control groups. The control
32
33 170 group may involve a combination of strategies: visits to mental health services, non-
34
35 171 psychological therapies (e.g., pharmacotherapy), and other expected interventions. Studies that
36
37 172 do not include a control group will be excluded (e.g., cross-sectional trials).
38
39
40

41 173

42 174 Types of outcomes measures

43 175 The main outcomes will be the repetition of suicide attempt, suicide ideation and suicide death.
44
45 176 Suicide is defined as a self-inflicted and potentially injurious behaviour that is performed as a
46
47 177 deliberate method to die [42]. Suicide attempts are defined as self-inflicted harm with a non-
48
49 178 fatal outcome for which there is evidence, explicit or implicit, of the intention to die [3].
50
51 179 Furthermore, suicidal ideation is described by thoughts, ideas, or ruminations about the
52
53 180 possibility of ending one's life [43].
54
55
56
57
58
59
60

181 The assessment can be conducted post-intervention with no limit on the length of
 182 follow-up, employing quantitative measurement of suicidal-related outcomes. The suicidal
 183 ideation outcome may be measured using different validated instruments (Table 1). According
 184 to a recent systematic review [44], the most common instruments are the Beck Scale for Suicide
 185 Ideation (BSI) and the Columbia Suicide Severity Rating Scale (C-SSRS). The non-fatal suicide
 186 attempts outcome will be measured by the number of suicide attempts a person has made
 187 within a certain timeframe. The suicide death outcome will be measured by the number of
 188 people who have died by suicide.

189

190 **Table 1.** Instruments most cited in the literature for assessing suicide risk.

Instrument	Reference
Beck Scale for Suicide Ideation (BSI)	Beck <i>et al.</i> [45]
The Columbia – Suicide Severity Rating Scale (C-SSRS)	Posner <i>et al.</i> [46]
Beck Suicidal Intent Scale (SIS)	Beck <i>et al.</i> [47]
Paykel Suicide Scale (PSS)	Fonseca-Pedrero <i>et al.</i> [48]
Beck Suicide Scale – worst ever version (BSSw)	Beck & Steer [49]
Suicidal Ideation Questionnaire (SIQ; SIQ-Junior)	Reynolds [50]
Mini-International Neuropsychiatric Interview (MINI)	Sheehan <i>et al.</i> [51]
Risk of Suicide Questionnaire (RSQ; RSQ-Revised)	Horowitz <i>et al.</i> [52]
Suicide Score Scale (SSS)	Innamorati <i>et al.</i> [53]
Suicide Opinion Questionnaire (SOQ)	Domino <i>et al.</i> [54]
WMH Composite International Diagnostic Interview (WMH-CIDI)	Kessler & Ustün [55]
InterSePT Suicide Scale (ISST)	Lindenmayer <i>et al.</i> [56]
Plutchik Suicide Risk Scale	Koslowsky <i>et al.</i> [57]
Harkavy-Asnis Suicide Scale (HASS)	Friedman & Asnis [58]
Suicide Probability Scale (SPS)	Cull & Gill [59]

191

192 **Data collection and analysis**

193 Information sources and search strategy

1
2
3 194 Literature searches were conducted in the following electronic databases: PubMed (by NCBI-
4
5 195 NLM-NIH website), PsycInfo (by ProQuest), Scopus (by [ww.scopus.com](http://www.scopus.com)), and Web of Science
6
7 196 Core Collection (by www.clarivate.com). Grey literature and unpublished records were searched
8
9 197 on the following websites: ClinicalTrials.gov and Google Scholar.

11
12 198 Authors of published articles will be contacted to retrieve relevant information about
13
14 199 their study that was either not reported or unclear. The references cited in the included articles
15
16 200 will be considered for data collection. We will also examine the reference lists of existing
17
18 201 systematic reviews on similar topics to identify other relevant articles. In addition, the personnel
19
20 202 files of the workgroup members will be checked and experts in the field of suicide will be
21
22 203 consulted regarding relevant publications.

23
24
25 204 The search strategy was performed using relevant subject headings and search syntax
26
27 205 appropriate to each database, including variations and combinations of free-text terms and
28
29 206 Thersaurus of psychological index terms (American Psychological Association, APA) or Medical
30
31 207 Subject Headings (MeSH) terms, combining with appropriate boolean operators. The general
32
33 208 structure of search syntax was: (suicid* OR self-injur* OR self-harm OR “self-destructive
34
35 209 behavio*” OR self-poisoning) AND (intervention OR therap* OR treatment OR psychotherap*
36
37 210 OR prevention OR follow-up OR contact OR post-discharge) AND (synchron* OR remote OR non-
38
39 211 presential OR non-face-to-face OR distance OR digital OR online OR telehealth OR telemedicine
40
41 212 OR eHealth OR mHealth OR telephone OR phone OR call OR hotline OR helpline OR “suicide line”
42
43 213 OR chat OR videoconferen* OR App OR text messag* OR SMS) AND (“randomised controlled
44
45 214 trial” OR “controlled clinical trials” OR “clinical studies”) NOT (review OR protocol). The drafted
46
47 215 electronic search strategy for PubMed database is included in the Supplementary File 2.

48
49
50
51
52 216 The search was scheduled to be completed by April 2022. All searches have been re-run,
53
54 217 before publication of the article, as more than 12 months have elapsed since the date of the
55
56 218 initial search. The search was limited to English or Spanish and was performed with no
57
58 219 restrictions on the time of publication.

1
2
3 220 The search strategy was developed by the research team with the collaboration of an
4
5 221 experienced health science librarian (GC), adhering to the Peer Review of Electronic Search
6
7 222 Strategies (PRESS) [60]. Sensitivity (i.e., retrieval rate) and specificity (i.e., precision rate) criteria
8
9
10 223 were considered in the development of the literature search strategy [61, 62]; however,
11
12 224 sensitivity was prioritised.

13 225 14 15 16 226 Data management

17
18 227 Results from the literature search will be imported into Rayyan Systems Inc. [63], an Internet-
19
20 228 based software programme that facilitates collaboration and pursuit accelerated screening
21
22 229 process. During the review process, this tool will be used to identify duplicate records and
23
24 230 manage the data. Mendeley (version 1.19.8) will be employed as reference management
25
26 231 software.

27 28 29 30 232 31 32 233 Selection process

33
34 234 In the first phase, duplicate articles in the databases will be automatically removed by Rayyan
35
36 235 Systems Inc. and manually by the first reviewer (LC). In the second phase, two authors (LC and
37
38 236 MPJ) will blind-screen all articles based on titles, abstracts, and keywords. In the third phase,
39
40 237 the two reviewers (LC and MPJ) will independently evaluate the full-text articles according to
41
42 238 eligibility criteria. The reasons for excluding articles will be recorded. If necessary, a third
43
44 239 reviewer (AS) will be requested for discrepancies that may not be resolved by consensus among
45
46 240 the two reviewers (LC and MPJ). Inter-rater agreement will be calculated by Cohen's Kappa in
47
48 241 the second and third phases, prior to reaching consensus on the discrepancies between the two
49
50 242 reviewers or contrasting them with a third reviewer. The article selection process will be
51
52 243 described in a PRISMA flow diagram [64].

53 54 55 56 244 57 58 59 245 Data collection process

1
2
3 246 Data extraction will be conducted independently by two authors (LC and MPJ), using a standard
4
5 247 extraction form in line with the template from The Cochrane Collaboration [65]. Data will be
6
7 248 managed using Microsoft Excel (16.56 version). For missing information or data that needs to
8
9 249 be clarified, first or corresponding authors of primary studies will be contacted by email; one
10
11 250 follow-up email will be sent if no response is received to the first email.
12
13

14 251

15
16 252 Data items

17
18 253 Data will be extracted from the following categories: a) general characteristics of the study
19
20 254 (authors, date of publication, setting and geographic location, research design, sample size,
21
22 255 participant sociodemographic and baseline characteristics), b) intervention and control group
23
24 256 details (type of intervention or control group, sample sizes, follow-up time, dropout rates), c)
25
26 257 outcomes (descriptive and comparative statistical indexes of efficacy and effectiveness,
27
28 258 assessment measures, and procedures), and d) limitations reported by study authors.
29

30
31 259

32
33
34 260 **Risk of bias assessment**

35
36 261 The RoB assessment will be conducted independently by two reviewers (LC and MPJ), employing
37
38 262 the Revised Cochrane risk-of-bias tool for randomised trials (RoB 2.0) [66], and Risk-of-bias In
39
40 263 Non-randomised Studies – of Interventions (ROBINS-I) [67].
41

42
43 264 Inter-rater agreement will be calculated by Cohen's Kappa. Disagreements will be
44
45 265 resolved by consensus with a third blind reviewer (AS). Ratings of bias for each study will be
46
47 266 classified as low, high, or unclear RoB, according to standardised methodology. Intra-
48
49 267 methodological quality evaluation will be synthesised in tables that will comprise the summary
50
51 268 of each study individually, identifying their RoB. Studies will not be excluded based on their level
52
53 269 of RoB.
54

55
56 270

57
58
59 271 **Data synthesis**
60

1
2
3 272 A descriptive summary and explanation of the characteristics and findings of all included studies
4
5 273 will be displayed in a comprehensive table. A narrative synthesis will be conducted, and a
6
7 274 random-effects meta-analysis will be computed when a suicidal-related outcome is reported in
8
9 275 at least three studies. To ensure that the data we are combining from different studies is
10
11 276 comparable and can be appropriately synthesised, several adjustments may be necessary. These
12
13 277 adjustments could involve contacting study authors to request more detailed data or
14
15 278 transforming the data (e.g., if we encounter a situation where some studies report suicide
16
17 279 attempts as a binary outcome while others report them as a count); conducting sensitivity
18
19 280 analyses to assess the impact of the articles; performing subgroup analyses for each type of
20
21 281 data; or adopting a narrative synthesis approach when a quantitative combination of studies is
22
23 282 not feasible. Any data transformations will be documented in the manuscript, and the
24
25 283 limitations introduced by differences in data reporting between studies should be
26
27 284 acknowledged.

28 285 Three types of meta-analyses will be conducted according to the type of outcome
29
30 286 measure: count (number of suicide attempts), quantitative (standardised mean differences of
31
32 287 suicidal ideation), and binary (death by suicide). The length of the follow-up period will be
33
34 288 included as an exposure (offset) variable in meta-analyses of the number of suicide attempts. In
35
36 289 the meta-analyses of the suicidal ideation and death by suicide outcomes, responses will be
37
38 290 analysed at different follow-up time intervals, as indicated below in the description of subgroup
39
40 291 analyses. Mean differences between the control group and intervention group will be
41
42 292 transformed into Hedges' g standardised effect sizes [68], which means different tools for
43
44 293 measuring suicidal ideation will be combined. Effect sizes will be considered small ($g \geq 0.2$),
45
46 294 medium ($g \geq 0.5$), or large ($g \geq 0.8$) [69]. The Q and Tau^2 statistics will be calculated to assess the
47
48 295 statistical heterogeneity of effect sizes. Specific functions will be used to examine: (a) the profile
49
50 296 likelihood plots of the variance components; (b) the potential outlying and influential studies
51
52
53
54
55
56
57
58
59
60

297 and/or outcomes; and (c) the potential publication bias. All analyses will be performed using the
298 Metafor package (version 4.0-0) for R.

299

300 Sensitivity analysis

301 The potential effect on the results due to the trial design (i.e., pragmatic vs. explanatory trials)
302 and the RoB of the studies will be analysed, if feasible.

303

304 Analysis of subgroups or subsets

305 Subgroup and subset analyses will be carried out if feasible and warranted to examine potential
306 effect modifiers based on sociodemographic characteristics of participants, length, type of
307 treatment, research design, and RoB assessment. Meta-regression will be performed to analyse
308 quantitative potential effect modifiers or covariates that might influence the size of the
309 intervention effect (e.g., age). We plan to summarise and categorise the below subgroup or
310 subset analyses if there is enough data:

311 a) Age: adolescents (12 to 17 years of age), adults (18 to 65 years of age), and older adults
312 (over 65 years of age).

313 b) Type of intervention: type of synchronous remote-based interventions (telephone calls,
314 instant text messaging, 24/7 hotlines, videoconferencing).

315 c) Number of follow-up contacts: hotline (24-hour consultation with a non-standardised
316 number of follow-up contacts), 1 to 3 contacts, 3 to 6 contacts, and more than 6
317 contacts.

318 d) Length of contact period: hotlines (24-hour consultation with a non-standardised period
319 of follow-up contacts), up to 1-month follow-up, 1 to 3-month follow-up, 3 to 6-month
320 follow-up, and longer than 6-month follow-up.

321 e) Research design: RCTs, quasi-experimental trials, and observational case-controlled
322 studies.

1
2
3 323 f) RoB assessment: low, high, and unclear RoB.
4
5
6 324

7 325 **Publication bias**

8
9
10 326 Publication bias will be evaluated using Egger's test [70], funnel plots [71], and trim-and-fill
11
12 327 approaches [72].
13
14 328

15
16 329 **Confidence in cumulative evidence**

17
18 330 The overall quality of evidence will be evaluated according to the Grading of Recommendations
19 331 Assessment, Development, and Evaluation (GRADE) [73, 74] by two independent researchers
20
21 332 (LC and MPJ). Discrepancies will be resolved in a discussion with a third researcher (AS).
22
23 333

24
25
26
27 334 **Patient and public involvement**

28
29 335 Patients and/or the public were not involved in the design, conduct, reporting, or dissemination
30
31 336 plans of this research.
32
33 337

34
35
36 338 **DISCUSSION**

37
38 339 The wide variety of remotely delivered distance-based programmes for suicide prevention [20,
39 340 23, 26–28] and the current lack of guidance on their implementation warrant further research
40
41 341 to improve and standardise patient care.
42
43 342

44
45 343 To the best of the researchers' knowledge, no systematic review and meta-analysis has
46
47 344 been reported that examined the efficacy of synchronous and remote telepsychiatry
48
49 345 interventions, assessing suicide-specific outcomes. We aim to address a gap in research by
50
51 346 examining the efficacy of synchronous remote-based interventions that are specifically designed
52
53 347 for suicide prevention. The proposed approach is pertinent given the recent increase in the
54
55
56
57
58
59
60

1
2
3 348 It is anticipated that the systematic review will have predicted limitations that should be
4
5 349 considered. The inconsistency of terms used in suicidology is a limiting factor regarding the
6
7 350 search for articles and the subsequent eligibility of studies. In addition, suicide is a rare event,
8
9 351 making the design of studies with high statistical power particularly challenging. Furthermore,
10
11 352 people who attempt suicide are typified by poor treatment-seeking and limited adherence to
12
13 353 treatment [75], making it important to provide individuals at risk of suicide with appropriate and
14
15 354 cost-effectiveness treatment options.

16
17
18 355 A limited number of available studies is expected, which explains why the search
19
20 356 strategy prioritises sensitivity over specificity. Moreover, RCTs may not provide sufficient
21
22 357 evidence to exclude data from non-randomised studies. The inclusion of studies examining a
23
24 358 wide range of synchronous remote-communication technologies rather than a specific
25
26 359 intervention is intended to address this issue. Similarly, including no restriction on the mental
27
28 360 health condition should allow for the collection of comprehensive and relevant data. Research
29
30 361 studies that meet eligibility criteria may have a substantial degree of heterogeneity. In response,
31
32 362 we initially planned subgroup and subset analyses. However, the categorisation of interventions
33
34 363 into different typologies may be difficult since multiple research studies combine several
35
36 364 interventions simultaneously.

37
38
39 365 Aside from several limitations, there are potential strengths. The aim is to contribute to
40
41 366 the body of evidence on suicide. The development of the research proposed in the present
42
43 367 protocol will allow to analyse the quality and methodology used in the research of remote-based
44
45 368 synchronous interventions for suicide prevention, synthesizing scientific evidence, generating
46
47 369 hypotheses, and establishing lines of research. In addition, the study protocol per se will provide
48
49 370 more transparency in the methods and processes involved, decrease the possibility of
50
51 371 duplication, and reduce bias. The meta-analysis of the studies found can allow the quantification
52
53 372 of their global efficacy and effectiveness. Likewise, the subgroups or subsets analyses can
54
55
56
57
58
59
60

1
2
3 373 provide useful information to guide the design of more efficient and effective efficacy or
4
5 374 effectiveness of remote-based synchronous programs for suicide prevention in the future.

6
7 375 The current registration of the protocol for this review at PROSPERO may undergo
8
9 376 changes, if approved by all authors. Any changes to the protocol will be described and explained
10
11 377 in the final manuscript. The research has been previously presented at a conference and has
12
13 378 been published as a conference abstract [76].
14
15

16 379

17 380 **ETHICS AND DISSEMINATION**

18
19 381 Ethics approval is not needed, as systematic reviews are based on published studies. The results
20
21 382 will be disseminated through peer-reviewed publications.
22
23

24 383

25 384 **Ethics statements**

26 385 Patient consent for publication

27 386 Not applicable.
28
29

30 387

31
32 388 **Contributors** AS is the guarantor. LC, JML, DP, AC, and AS: Writing - Original Draft. LC, AS, MPJ,
33
34 389 JPS, and CM: Software. LC, JML, DP and AS: Project administration, Supervision. All authors:
35
36 390 Conceptualization, Methodology, Writing - Review & Editing. JML, AS, JPS, and CM provided
37
38 391 statistical expertise. DP and AC provided expertise on suicidal behaviours. All authors approved
39
40 392 the final manuscript.
41
42

43 393

44 394 **Acknowledgements** Authors' thanks Guillem Cebrián (GC), director of the Library Hospital
45
46 395 Universitari Parc Taulí and head of the Unitat de Gestió del Coneixement de l'Institut
47
48 396 d'Investigació i Innovació Parc Taulí (I3PT), for his invaluable support in the refinement of the
49
50 397 search strategies. Authors' gratitude goes to Universitat Autònoma de Barcelona and Hospital
51
52 398 Universitari Parc Taulí for critically analysing the study proposal and motivational support to
53
54
55
56
57
58
59
60

1
2
3 399 conduct this protocol. DP thanks the support of Spanish Ministry of Science and
4
5 400 Innovation/ISCIII/FEDER (PI21/01148); the Secretaria d'Universitats i Recerca del Departament
6
7 401 d'Economia i Coneixement of the Generalitat de Catalunya (2021 SGR 01431); the CERCA
8
9 402 programme of the I3PT; the Instituto de Salud Carlos III; and the CIBER of Mental Health
10
11 403 (CIBERSAM). The research has been previously presented at a conference and has been
12
13 404 published as a conference abstract [76].
14
15
16
17

405

18 406 **Funding** This research was funded by the Instituto de Salud Carlos III, Subdirección General de
19
20 407 Evaluación y Fomento de la Investigación (ISCIII) and Fondo Europeo de Desarrollo Regional
21
22 408 (FEDER), grant number PI21/01148 - Estudio de la relación entre cognición social y dolor
23
24 409 psicológico con el riesgo de presentar conductas suicidas (COGNISUI) - Fundación Parc Taulí, and
25
26 410 by MCIN/AEI/10.13039/501100011033 and "ERDF A way of making Europe", grant number
27
28 411 PID2022-141403NB-I00. The APC was funded by the Instituto de Salud Carlos III, Subdirección
29
30 412 General de Evaluación y Fomento de la Investigación (ISCIII) and Fondo Europeo de Desarrollo
31
32 413 Regional (FEDER). The funders had no role in the design of the study; in the collection, analysis,
33
34 414 or interpretation of data; in the writing of the manuscript; or in the decision to publish the
35
36 415 results. The Department of Mental Health of Hospital Universitari Parc Taulí, Unitat Mixta de
37
38 416 Neurociència Traslacional I3PT-INc-UAB, is the sponsor.
39
40
41
42

417

43
44
45 418 **Competing interests** D.P. has received grants and also served as a consultant or advisor for Rovi,
46
47 419 Angelini, Janssen, Lundbeck and Servier. The other authors declare no conflicts of interest.
48
49

420

421

50
51
52 422 **Patient consent for publication** Not applicable.
53
54
55
56

423

57
58
59 424 **Provenance and peer review** Not commissioned; externally peer reviewed.
60

1
2
3 425
4

5 426 **Supplemental material** Supplementary File 1. PRISMA-P 2015 Checklist (DOCX 35 KB).

6
7 427 Supplementary File 2. PubMed search strategy (DOCX 14 KB).
8
9

10 428
11

12 429 **Open access** This is an open access article distributed in accordance with the Creative Commons

13
14 430 Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix,

15
16 431 adapt, build upon this work non-commercially, and license their derivative works on different

17
18 432 terms, provided the original work is properly cited, appropriate credit is given, any changes are

19
20 433 made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by->

21
22
23 434 [nc/4.0/](http://creativecommons.org/licenses/by-nc/4.0/).
24
25

26 435
27

28 436 **ORCID iDs**

29
30 437 Laura Comendador Vázquez <https://orcid.org/0000-0002-5221-4794>

31
32 438 María P. Jiménez-Villamizar <https://orcid.org/0000-0003-2264-7422>

33
34 439 Josep-Maria Losilla <https://orcid.org/0000-0002-5140-5847>

35
36 440 Juan P. Sanabria-Mazo <https://orcid.org/0000-0003-1688-435X>

37
38 441 Corel Mateo-Canedo <https://orcid.org/0000-0002-0620-9257>

39
40 442 Ana Isabel Cebrià Meca <https://orcid.org/0000-0002-2632-8130>

41
42 443 Antoni Sanz Ruíz <https://orcid.org/0000-0002-7952-4477>

43
44 444 Diego J. Palao Vidal <https://orcid.org/0000-0002-3323-6568>
45
46
47

48 445
49

50 446 **REFERENCES**

51
52 447 1. World Health Organization. Suicide [online]. 2021. [https://www.who.int/news-room/fact-](https://www.who.int/news-room/fact-sheets/detail/suicide)
53
54 448 [sheets/detail/suicide](https://www.who.int/news-room/fact-sheets/detail/suicide) (accessed 30 Jan 2022).

55
56 449 2. World Health Organization. Suicide worldwide in 2019 [online]. 2021.

57
58
59 450 <https://www.who.int/publications-detail-redirect/9789240026643> (accessed 30 Jan 2022).
60

1:

- 1
2
3 451 3. World Health Organization. Suicide in the world: Global health estimates [online]. 2019.
4
5 452 <https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3->
6
7 453 [eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3-eng.pdf?sequence=1&isAllowed=y) (accessed 30 Jan 2022).
8
9
10 454 4. Artieda-Urrutia P, Parra-Urbe I, Garcia-Pares G, *et al.* Management of suicidal behaviour: Is
11
12 455 the world upside down? *Aust N Z J Psychiatry* 2014;48:399–401.
13
14 456 <https://doi.org/10.1177/0004867414525847>
15
16 457 5. Mokdad AH, Forouzanfar MH, Daoud F, *et al.* Global burden of diseases, injuries, and risk
17
18 458 factors for young people’s health during 1990–2013: A systematic analysis for the Global
19
20 459 Burden of Disease Study 2013. *Lancet* 2016;387:2383–401. <https://doi.org/10.1016/S0140->
21
22 460 [6736\(16\)00648-6](https://doi.org/10.1016/S0140-6736(16)00648-6)
23
24
25 461 6. Parra-Urbe I, Blasco-Fontecilla H, García-Parés G, *et al.* Attempted and completed suicide:
26
27 462 Not what we expected? *J Affect Disord* 2013;150:840–6.
28
29 463 <https://doi.org/10.1016/j.jad.2013.03.013>
30
31
32 464 7. Instituto Nacional de Estadística. Defunciones según la causa de muerte 2017 [online]. 2021.
33
34 465 <https://www.ine.es/jaxi/Datos.htm?path=/t15/p417/a2017/l0/&file=05008.px> (accessed
35
36 466 11 Mar 2022).
37
38
39 467 8. Zalsman G, Hawton K, Wasserman D, *et al.* Evidence-based national suicide prevention
40
41 468 taskforce in Europe: A consensus position paper. *Eur Neuropsychopharmacol* 2017;27:418–
42
43 469 21. <https://doi.org/10.1016/j.euroneuro.2017.01.012>
44
45
46 470 9. Olfson M, Wall M, Wang S, *et al.* Suicide following deliberate self-harm. *Am J Psychiat*
47
48 471 2017;174:765–74. <https://doi.org/10.1176/appi.ajp.2017.16111288>
49
50 472 10. Shand F, Vogl L, Robinson J. Improving patient care after a suicide attempt. *Australas*
51
52 473 *Psychiatry* 2018;26:145–8. <https://doi.org/10.1177/1039856218758560>
53
54
55 474 11. Parra-Urbe I, Blasco-Fontecilla H, Garcia-Parés G, *et al.* Risk of re-attempts and suicide death
56
57 475 after a suicide attempt: A survival analysis. *BMC Psychiatry* 2017;17:163.
58
59 476 <https://doi.org/10.1186/s12888-017-1317-z>
60

- 1
2
3 477 12. Inagaki M, Kawashima Y, Yonemoto N, *et al.* Active contact and follow-up interventions to
4
5 478 prevent repeat suicide attempts during high-risk periods among patients admitted to
6
7 479 emergency departments for suicidal behavior: A systematic review and meta-analysis. *BMC*
8
9 480 *Psychiatry* 2019;19:44. <https://doi.org/10.1186/s12888-019-2017-7>
11
12 481 13. Ganz D, Braquehais MD, Sher L. Secondary Prevention of Suicide. *PLoS Med*
13
14 482 2010;7:e1000271. <https://doi.org/10.1371/journal.pmed.1000271>
15
16 483 14. World Health Organization. The European Mental Health Action Plan 2013–2020 [online].
17
18 484 2013. [https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf)
19
20 485 [Mental-Health-Acion-Plan-2013-2020.pdf](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf) (accessed 15 Feb 2022).
21
22 486 15. World Health Organization. Preventing suicide: A global imperative [online]. 2014.
23
24 487 https://www.who.int/mental_health/suicide-prevention/exe_summary_english.pdf?ua=1
25
26 488 (accessed 15 Feb 2022).
27
28 489 16. World Health Organization. Comprehensive mental health action plan 2013–2030 [online].
29
30 490 2021. <https://apps.who.int/iris/rest/bitstreams/1371507/retrieve> (accessed 15 Feb 2022).
31
32 491 17. Inagaki M, Kawashima Y, Kawanishi C, *et al.* Interventions to prevent repeat suicidal
33
34 492 behavior in patients admitted to an emergency department for a suicide attempt: A meta-
35
36 493 analysis. *J Affect Disord* 2015;175:66–78. <https://doi.org/10.1016/j.jad.2014.12.048>
37
38 494 18. Zalsman G, Hawton K, Wasserman D, *et al.* Suicide prevention strategies revisited: 10-year
39
40 495 systematic review. *Lancet Psychiatry* 2016;3:646–59. [https://doi.org/10.1016/S2215-](https://doi.org/10.1016/S2215-0366(16)30030-X)
41
42 496 [0366\(16\)30030-X](https://doi.org/10.1016/S2215-0366(16)30030-X)
43
44 497 19. Lin T, Stone SJ, Heckman TG, *et al.* Zoom-in to zone-out: Therapists report less therapeutic
45
46 498 skill in telepsychology versus face-to-face therapy during the COVID-19 pandemic.
47
48 499 *Psychotherapy* 2021;58:449. <http://dx.doi.org/10.1037/pst0000398>
49
50 500 20. Gilat I, Shahar G. Emotional first aid for a suicide crisis: Comparison between telephonic
51
52 501 hotline and Internet. *Psychiatry-Interpers Biol Process* 2007;70:12–8.
53
54 502 <https://doi.org/10.1521/psyc.2007.70.1.12>
55
56
57
58
59
60

- 1
2
3 503 21. Seong JM, Cho Y, Cho GC, *et al.* Effects of mobile messenger counseling on case management
4
5 504 success for individuals engaging in self-harm or suicide attempts who were discharged from
6
7 505 emergency departments. *Clin Exp Emerg Med* 2021;8:48–54.
8
9 506 <https://doi.org/10.15441/CEEM.20.133>
11
12 507 22. Vijayakumar L, Umamaheswari C, Shujaath Ali Z, *et al.* Intervention for suicide attempters:
13
14 508 A randomized controlled study. *Indian J Psychiatry* 2011;53:244-8.
15
16 509 <https://doi.org/10.4103/0019-5545.86817>
17
18 510 23. Cebrià AI, Parra I, Pàmias M, *et al.* Effectiveness of a telephone management programme
19
20 511 for patients discharged from an emergency department after a suicide attempt: Controlled
21
22 512 study in a Spanish population. *J Affect Disord* 2013;147:269–76.
23
24 513 <https://doi.org/10.1016/j.jad.2012.11.016>
25
26 514 24. Cedereke M, Monti K, Öjehagen A. Telephone contact with patients in the year after a
27
28 515 suicide attempt: Does it affect treatment attendance and outcome? A randomised
29
30 516 controlled study. *Eur Psychiat* 2002;17:82–91. [https://doi.org/10.1016/S0924-](https://doi.org/10.1016/S0924-9338(02)00632-6)
31
32 517 [9338\(02\)00632-6](https://doi.org/10.1016/S0924-9338(02)00632-6)
33
34 518 25. De Leo D, Buono MD, Dwyer J. Suicide among the elderly: The long-term impact of a
35
36 519 telephone support and assessment intervention in northern Italy. *Br J Psychiatry*
37
38 520 2002;181:226–9. <https://doi.org/10.1192/bjp.181.3.226>
39
40 521 26. Fleischmann A, Bertolote JM, Wasserman D, *et al.* Effectiveness of brief intervention and
41
42 522 contact for suicide attempters: A randomized controlled trial in five countries. *Bull World*
43
44 523 *Health Organ* 2008;86:703–9. <https://doi.org/10.2471/BLT.07.046995>
45
46 524 27. Gould MS, Munfakh JLH, Kleinman M, *et al.* National Suicide Prevention Lifeline: Enhancing
47
48 525 mental health care for suicidal individuals and other people in crisis. *Suicide Life-Threat*
49
50 526 *Behav* 2012;42:22–35. <https://doi.org/10.1111/j.1943-278X.2011.00068.x>
51
52
53
54
55
56
57
58
59
60

- 1
2
3 527 28. Miller IW, Camargo CA, Arias SA, *et al.* Suicide prevention in an emergency department
4
5 528 population: The ED-SAFE study. *JAMA Psychiatry* 2017;74:563-70.
6
7 529 <https://doi.org/10.1001/jamapsychiatry.2017.0678>
8
9
10 530 29. Mousavi S, Zohreh R, Sharbafchi M, *et al.* The efficacy of telephonic follow up in prevention
11
12 531 of suicidal reattempt in patients with suicide attempt history. *Adv Biomed Res* 2014;3:198.
13
14 532 <https://doi.org/10.4103/2277-9175.142043>
15
16 533 30. Vaiva G, Ducrocq F, Meyer P, *et al.* Effect of telephone contact on further suicide attempts
17
18 534 in patients discharged from an emergency department: Randomised controlled study. *BMJ*
19
20 535 2006;332:1241-5. <https://doi.org/10.1136/bmj.332.7552.1241>
21
22
23 536 31. Cebrià AI, Pérez-Bonaventura I, Cuijpers P, *et al.* Telephone management program for
24
25 537 patients discharged from an emergency department after a suicide attempt. *Crisis*
26
27 538 2015;36:345-52. <https://doi.org/10.1027/0227-5910/a000331>
28
29
30 539 32. Milner AJ, Carter G, Pirkis J, *et al.* Letters, green cards, telephone calls and postcards:
31
32 540 Systematic and meta-analytic review of brief contact interventions for reducing self-harm,
33
34 541 suicide attempts and suicide. *Br J Psychiatry* 2015;206:184-90.
35
36 542 <https://doi.org/10.1192/bjp.bp.114.147819>
37
38
39 543 33. Noh D, Park YS, Oh EG. Effectiveness of telephone-delivered interventions following suicide
40
41 544 attempts: A systematic review. *Arch Psychiatr Nurs* 2016;30:114-9.
42
43 545 <https://doi.org/10.1016/j.apnu.2015.10.012>
44
45
46 546 34. Luxton DD, June JD, Comtois KA. Can postdischarge follow-up contacts prevent suicide and
47
48 547 suicidal behavior? A Review of the Evidence. *Crisis* 2013;34:32-41.
49
50 548 <https://doi.org/10.1027/0227-5910/a000158>
51
52
53 549 35. Bertolote JM, Fleischmann A, De Leo D, *et al.* Repetition of suicide attempts data from
54
55 550 emergency care settings in five culturally different low- and middle-income countries
56
57 551 participating in the WHO SUPRE-MISS study. *Crisis* 2010;31:194-201.
58
59 552 <https://doi.org/10.1027/0027-5910/a000052>
60

- 1
2
3 553 36. Mouaffak F, Marchand A, Castaigne E, *et al.* OSTA program: A French follow up intervention
4
5 554 program for suicide prevention. *Psychiatry Res* 2015;230:913–8.
6
7 555 <https://doi.org/10.1016/j.psychres.2015.11.024>
8
9
10 556 37. Krysinska KE, De Leo D. Telecommunication and suicide prevention: Hopes and challenges
11
12 557 for the new century. *Omega-J Death Dying* 2007;55:237–53.
13
14 558 <https://doi.org/10.2190/OM.55.3.e>
15
16 559 38. Higgins JPT, Thomas J, Chandler J, *et al.* Cochrane Handbook for Systematic Reviews of
17
18 560 Interventions version 6.2. [online]. 2021. <https://training.cochrane.org/handbook>
19
20 561 (accessed 30 Jan 2022).
21
22
23 562 39. Moher D, Shamseer L, Clarke M, *et al.* Preferred reporting items for systematic review and
24
25 563 meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;4.
26
27 564 <https://doi.org/10.1186/2046-4053-4-1>
28
29
30 565 40. Shamseer L, Moher D, Clarke M, *et al.* Preferred reporting items for systematic review and
31
32 566 meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ*
33
34 567 2015;349:g7647–7. <https://doi.org/10.1136/bmj.g7647>
35
36
37 568 41. Saimbert M. Developing clinical questions for a systematic review. In: Holly C, Salmond S,
38
39 569 Saimbert M, eds. *Comprehensive Systematic Review for Advanced Practice Nursing*. 3rd ed.
40
41 570 United States, USA: Springer Publishing Company 2021:85–101.
42
43 571 <https://doi.org/10.1891/9780826152268.0005>
44
45
46 572 42. Gómez A, Silva H, Amon R. *El Suicidio. Teoría, Clínica y Manejo*. Barcelona, ES: Editorial
47
48 573 Mediterráneo 2018.
49
50 574 43. World Health Organization. ICD-11 for mortality and morbidity statistics [online]. 2021.
51
52 575 <https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/778734771> (accessed
53
54 576 15 Feb 2022).
55
56
57
58
59
60

- 1
2
3 577 44. Andreotti ET, Ipuchima JR, Cazella SC, *et al.* Instruments to assess suicide risk: a systematic
4
5 578 review. *Trends Psychiatry Psychother* 2020;42:276-281. [https://doi.org/10.1590/2237-](https://doi.org/10.1590/2237-6089-2019-0092)
6
7 579 [6089-2019-0092](https://doi.org/10.1590/2237-6089-2019-0092)
8
9
10 580 45. Beck AT, Kovacs M, Weissman A. Assessment of suicidal ideation: the scale for suicidal
11
12 581 ideation. *J Consult Clin Psychol* 1979;47:343-352. [https://doi.org/10.1037//0022-](https://doi.org/10.1037//0022-006x.47.2.343)
13
14 582 [006x.47.2.343](https://doi.org/10.1037//0022-006x.47.2.343)
15
16 583 46. Posner K, Brent D, Lucas C, *et al.* Columbia-Suicide Severity Rating Scale (C-SSRS). New York,
17
18 584 USA: Columbia University Medical Center 2008.
19
20
21 585 47. Beck AT, Schuyler D, Herman I. Development of suicidal intent scales. In: Beck AT, Resnik
22
23 586 HLP, Lettieri DJ, eds. *The Prediction of Suicide*. Philadelphia, PA: Charles Press 1974:45-56.
24
25 587 48. Fonseca-Pedrero E, Pérez de Albéniz A. Evaluación de la conducta suicida en adolescentes:
26
27 588 A propósito de la escala Paykel de suicidio. *Papeles del Psicol* 2020; 41:106-115.
28
29 589 <https://dx.doi.org/10.23923/pap.psicol2020.2928>
30
31
32 590 49. Beck AT, Steer RA. Manual for the Beck scale for suicide ideation. San Antonio, TX:
33
34 591 Psychological Corporation 1991.
35
36 592 50. Reynolds WM. Suicidal ideation questionnaire (SIQ). Odessa, UKR: Psychological Assessment
37
38 593 Resources 1987.
39
40
41 594 51. Sheehan DV, Lecrubier Y, Sheehan KH, *et al.* The Mini-International Neuropsychiatric
42
43 595 Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric
44
45 596 interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59 Suppl 20:22-33.
46
47
48 597 52. Horowitz LM, Wang PS, Koocher GP, *et al.* Detecting suicide risk in a pediatric emergency
49
50 598 department: development of a brief screening tool. *Pediatrics* 2001;107:1133-7.
51
52 599 <https://doi.org/10.1542/peds.107.5.1133>
53
54
55 600 53. Innamorati M, Pompili M, Lester D, *et al.* Recreational drug use and suicidality among Italian
56
57 601 young adults. *J Addict Dis* 2008;27:51-9. <https://doi.org/10.1080/10550880802324796>
58
59
60

- 1
2
3 602 54. Domino G, Moore D, Westlake L, *et al.* Attitudes toward suicide: a factor analytic approach.
4
5 603 *J Clin Psychol* 1982;38:257-62. [https://doi.org/10.1002/1097-4679\(198204\)38:2<257::aid-](https://doi.org/10.1002/1097-4679(198204)38:2<257::aid-)
6
7 604 [jclp2270380205>3.0.co;2-i](https://doi.org/10.1002/1097-4679(198204)38:2<257::aid-jclp2270380205>3.0.co;2-i)
8
9 605 55. Kessler RC, Ustün TB. The World Mental Health (WMH) Survey Initiative Version of the World
10
11 606 Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J*
12
13 607 *Methods Psychiatr Res* 2004;13:93-121. <https://doi.org/10.1002/mpr.168>
14
15 608 56. Lindenmayer JP, Czobor P, Alphas L, *et al.* The InterSePT scale for suicidal thinking reliability
16
17 609 and validity. *Schizophr Res* 2003;63:161-70. [https://doi.org/10.1016/s0920-9964\(02\)00335-](https://doi.org/10.1016/s0920-9964(02)00335-3)
18
19 610 [3](https://doi.org/10.1016/s0920-9964(02)00335-3)
20
21 611 57. Koslowsky M, Bleich A, Greenspoon A, *et al.* Assessing the validity of the Plutchik Suicide
22
23 612 Risk Scale. *J Psychiatr Res* 1991;25:155-8. [https://doi.org/10.1016/0022-3956\(91\)90019-7](https://doi.org/10.1016/0022-3956(91)90019-7)
24
25 613 58. Friedman JMH, Asnis GM. Assessment of suicidal behavior: A new instrument. *Psychiatr Ann*
26
27 614 1989;19:382–387. <https://doi.org/10.3928/0048-5713-19890701-11>
28
29 615 59. Cull JG, Gill WW. Suicide Probability Scale (SPS) Manual. Los Angeles, USA: Western
30
31 616 Psychological Services 1988.
32
33 617 60. McGowan J, Sampson M, Salzwedel DM, *et al.* PRESS Peer Review of Electronic Search
34
35 618 Strategies: 2015 Guideline Statement. *J Clin Epidemiol* 2016;75:40–6.
36
37 619 <https://doi.org/10.1016/j.jclinepi.2016.01.021>
38
39 620 61. Amezcua M. La Búsqueda Bibliográfica en diez pasos. *Index Enferm* 2015;24:14-14.
40
41 621 <https://dx.doi.org/10.4321/S1132-12962015000100028>
42
43 622 62. Rada GG, Andrade AM, Leyton-Sch V, *et al.* Búsqueda de información en medicina basada
44
45 623 en evidencia. *Rev méd Chile* 2004;132:253-259. [https://doi.org/10.4067/S0034-](https://doi.org/10.4067/S0034-98872004000200016)
46
47 624 [98872004000200016](https://doi.org/10.4067/S0034-98872004000200016)
48
49 625 63. Ouzzani M, Hammady H, Fedorowicz Z, *et al.* Rayyan—a web and mobile app for systematic
50
51 626 reviews. *Syst Rev* 2016;5(1):1-10. <https://doi.org/10.1186/s13643-016-0384-4>
52
53
54
55
56
57
58
59
60

- 1
2
3 627 64. Moher D, Liberati A, Tetzlaff J, *et al.* Preferred reporting items for systematic reviews and
4
5 628 meta-analyses: The PRISMA statement. *Int J Surg* 2010;8:336–41.
6
7 629 <https://doi.org/10.1016/j.ijsu.2010.02.007>
8
9
10 630 65. The Cochrane Collaboration. Data collection form for intervention reviews for RCTs and non-
11
12 631 RCTs – template [online]. 2019. <https://dplp.cochrane.org/data-extraction-forms> (accessed
13
14 632 30 Feb 2022).
15
16 633 66. Sterne JA, Savović J, Page MJ, *et al.* RoB 2: A revised tool for assessing risk of bias in
17
18 634 randomised trials. *BMJ* 2019;366:l4898. <https://doi.org/10.1136/bmj.l4898>
19
20
21 635 67. Sterne JA, Hernán MA, Reeves BC, *et al.* ROBINS-I: A tool for assessing risk of bias in non-
22
23 636 randomised studies of interventions. *BMJ* 2016;366:i4919.
24
25 637 <https://doi.org/10.1136/bmj.i4919>
26
27
28 638 68. Hedges LV. Distribution Theory for Glass’s Estimator of Effect Size and Related Estimators. *J*
29
30 639 *Stat Educ* 1981;6:107-128. <https://doi.org/10.2307/1164588>
31
32
33 640 69. Cohen J. Statistical Power Analysis for the Behavioral Sciences. New York, US: Lawrence
34
35 641 Erlbaum Associates 1988.
36
37 642 70. Egger M, Smith GD, Schneider M, *et al.* Bias in meta-analysis detected by a simple, graphical
38
39 643 test. *BMJ* 1997;315:629–34. <https://doi.org/10.1136/bmj.315.7109.629>
40
41
42 644 71. Liu JL. The role of the funnel plot in detecting publication and related biases in meta-analysis.
43
44 645 *Evid-Based Dent* 2011;12(4):121–2. <https://doi.org/10.1038/sj.ebd.6400831>
45
46
47 646 72. Shi L, Lin L. The trim-and-fill method for publication bias: practical guidelines and
48
49 647 recommendations based on a large database of meta-analyses. *Medicine (Baltimore)*
50
51 648 2019;98:e15987. <https://doi.org/10.1097/MD.00000000000015987>
52
53
54 649 73. Schünemann H, Brożek J, Guyatt G, *et al.* GRADE Handbook for Grading Quality of Evidence
55
56 650 and Strength of Recommendations [online]. 2013.
57
58 651 <https://gdt.gradepr.org/app/handbook/handbook.html> (accessed 30 Feb 2022).
59
60

- 1
2
3 652 74. Ryan R, Hill S. How to GRADE the quality of the evidence. Cochrane Consumers and
4
5 653 Communication Group, Version 3.0. [online]. 2016. [https://ccrg.cochrane.org/author-](https://ccrg.cochrane.org/author-resources)
6
7 654 [resources](https://ccrg.cochrane.org/author-resources) (accessed 30 Feb 2022).
8
9
10 655 75. Bruffaerts R, Demyttenaere K, Hwang I, *et al*. Treatment of suicidal people around the world.
11
12 656 *Br J Psychiatry* 2011;199:64–70. <https://doi.org/10.1192/bjp.bp.110.084129>
13
14 657 76. Comendador L, Cebrià A, Sanz A, *et al*. Efficacy of synchronous remote-based interventions
15
16 658 for suicide prevention among adolescent and adult patients: A systematic review and meta-
17
18 659 analysis. *Eur Psychiatry* 2022;65:S295–6. <http://dx.doi.org/10.1192/j.eurpsy.2022.754>
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1-2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	24
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	379-383
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	397-407
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	397-407
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	404-406
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	39-112
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	124-129
METHODS					

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	131-190 215-218
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	191-202 215
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Supplementary File 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	225-230
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	232-242
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	244-249
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	251-257
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	174-190
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	259-268
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	273-274 284 - 290
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	290-297
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	299-322
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	271-274

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	324-326
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	328-331

For peer review only

Supplementary File 2. PubMed search strategy

Search strategy

("suicide"[MeSH Terms] OR suicid*[Title] OR "suicidal ideation"[MeSH Terms] OR "suicide ideation"[Title] OR "suicide, attempted"[MeSH Terms] OR "attempted suicide"[Title] OR "suicidal behavio*"[Title] OR "non-fatal attempt"[Title] OR "unsuccessful attempt"[Title] OR "suicide, completed"[MeSH Terms] OR "completed suicide"[Title] OR "fatal attempt"[Title] OR "self-injurious behavior"[MeSH Terms] OR self-injur*[Title] OR self-harm*[Title] OR "self-destructive behavio*"[Title] OR self-poisoning[Title] OR "repeated suicide"[Title] OR suicide-risk[Title])

AND ("treatment outcome"[MeSH Terms] OR treatment[Title/Abstract] OR therap*[Title/Abstract] OR intervention*[Title/Abstract] OR "crisis intervention"[MeSH Terms] OR prevention[Title/Abstract] OR "follow-up studies"[MeSH Terms] OR follow-up[Title/Abstract] OR contact*[Title/Abstract] OR management[Title/Abstract] OR program*[Title/Abstract] OR "psychotherapy, brief"[MeSH Terms] OR "brief psychotherap*"[Title/Abstract] OR "brief contact intervention*"[Title/Abstract] OR "post-discharge intervention*"[Title/Abstract] OR effectiv*[Title/Abstract] OR efficacy[Title/Abstract])

AND (synchron*[Title/Abstract] OR "online systems"[MeSH Terms] OR real-time[Title/Abstract] OR "immediate communication*"[Title/Abstract] OR "remote consultation"[MeSH Terms] OR remote*[Title/Abstract] OR non-presential[Title/Abstract] OR non-face-to-face[Title/Abstract] OR non-attend*[Title/Abstract] OR "distance counseling"[MeSH Terms] OR distance[Title/Abstract] OR digital[Title/Abstract] OR "telemedicine"[MeSH Terms] OR telemedicine[Title/Abstract] OR "telecommunications"[MeSH Terms] OR "telecommunication*"[Title/Abstract] OR telehealth[Title/Abstract] OR teleassistance[Title/Abstract] OR telepsychology[Title/Abstract] OR telepsychiatry[Title/Abstract] OR telecare[Title/Abstract] OR telemonitoring[Title/Abstract] OR teleconsult*[Title/Abstract] OR telecounsel*[Title/Abstract] OR "telemental health"[Title/Abstract] OR online[Title/Abstract] OR on-line[Title/Abstract] OR "information and communication technolog*"[Title/Abstract] OR ICT[Title/Abstract] OR e-therap*[Title/Abstract] OR "electronic therap*"[Title/Abstract] OR e-health[Title/Abstract] OR "electronic health"[Title/Abstract] OR m-health[Title/Abstract] OR "mobile health"[Title/Abstract] OR "telephone"[MeSH Terms] OR telephon*[Title/Abstract] OR "cell phone"[MeSH Terms] OR phone*[Title/Abstract] OR "phone call*"[Title/Abstract] OR call*[Title/Abstract] OR "telephone contact*"[Title/Abstract] OR "hotlines"[MeSH Terms] OR hotline*[Title/Abstract] OR "hot line service*"[Title/Abstract] OR "call centers"[MeSH Terms] OR helpline*[Title/Abstract] OR lifeline*[Title/Abstract] OR "suicide prevention lifeline"[Title/Abstract] OR "crisis line*"[Title/Abstract] OR video*[Title/Abstract] OR "videoconferencing"[MeSH Terms] OR video-call*[Title/Abstract] OR "clinical videoconferencing"[Title/Abstract] OR CVT[Title/Abstract] OR chat*[Title/Abstract] OR chatbot[Title/Abstract] OR "text messaging"[MeSH Terms] OR "text messaging"[Title/Abstract] OR "instant messag*"[Title/Abstract] OR SMS[Title/Abstract] OR "mobile applications"[MeSH Terms] OR "mobile application*"[Title/Abstract] OR App[Title/Abstract] OR "phone application*"[Title/Abstract])

AND ("randomized controlled trials as Topic"[Mesh] OR "randomized controlled trial"[Title/Abstract] OR "controlled clinical trials as Topic"[Mesh] OR "controlled clinical trial"[Title/Abstract] OR trial*[Title/Abstract] OR "clinical studies as Topic"[MeSH Terms] OR

1
2
3 "clinical stud*"[Title/Abstract] OR "random allocation"[MeSH Terms] OR
4 random*[Title/Abstract] OR "intervention group*"[Title/Abstract] OR "control
5 group*"[Title/Abstract]
6

7 NOT (systematic review*[Title] OR review*[Title] OR meta*[Title] OR protocol[Title])
8

9 **Filters**
10

11 The following filters were applied: text availability (Full text), language (English, Spanish), age
12 (Adolescent: 13-18 years, Adult: 19+ years).
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

BMJ Open

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075116.R2
Article Type:	Protocol
Date Submitted by the Author:	15-Oct-2023
Complete List of Authors:	Comendador, Laura; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Jimenz Villamizar, Mara Paola; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Losilla, Josep-Maria; Autonomous University of Barcelona, Department of Psychobiology and Methodology of Health Science Area of Behavioral Science Methodology Sanabria-Mazo, Juan; Institut de Recerca Sant Joan de Déu; Autonomous University of Barcelona, Department of Basics Mateo Canedo, Corel; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Cebria, Ana Isabel ; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute Sanz, Antoni; Autonomous University of Barcelona, Basic, Developmental and Educational Psychology Palao, Diego; Autonomous University of Barcelona, Psychiatry and Forensic Medicine; Parc Taulí Research and Innovation Institute
Primary Subject Heading:	Mental health
Secondary Subject Heading:	Public health
Keywords:	Suicide & self-harm < PSYCHIATRY, Telemedicine < BIOTECHNOLOGY & BIOINFORMATICS, PREVENTIVE MEDICINE

SCHOLARONE™
Manuscripts

The effect of synchronous remote-based interventions on suicidal behaviours: Protocol for a systematic review and meta-analysis

Laura Comendador^{1,2}, María P. Jiménez-Villamizar³, Josep-Maria Losilla⁴, Juan P. Sanabria-Mazo^{3,5}, Corel Mateo-Canedo³, Ana Isabel Cebrià^{2,6,7}, Antoni Sanz^{3,8}, Diego Palao^{1,2,7}

¹Department of Psychiatry and Forensic Medicine, Faculty of Medicine, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

² Department of Mental Health. e-MH-PEMN – 2021 SGR 01431. Parc Taulí Hospital Universitari. Institut d'Investigació i Innovació Parc Taulí (I3PT-CERCA), Unitat de Neurociències Traslacional I3PT-INc UAB, Institut de Neurociències. Universitat Autònoma de Barcelona. 08208 Sabadell, Spain.

³Department of Basic, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁴Department of Psychobiology and Methodology of Health Sciences, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁵Teaching, Research & Innovation Unit, Parc Sanitari Sant Joan de Déu. 08830 Sant Boi de Llobregat, Spain.

⁶Department of Clinical and Health Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

⁷Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Instituto de Salud Carlos III. 28029 Madrid, Spain.

⁸Stress and Health Research Group (GIES). Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès, Spain.

Corresponding authors

Antoni Sanz, PhD

Department of Basics, Developmental and Educational Psychology, Faculty of Psychology, Universitat Autònoma de Barcelona.

Carrer de la Fortuna, s/n. Campus de Bellaterra, Universitat Autònoma de Barcelona. 08193 Cerdanyola del Vallès (Spain).

E-mail: antonio.sanz@uab.cat

Ana Isabel Cebrià, PhD

Department of Mental Health. e-MH-PEMN – 2021 SGR 01431. Parc Taulí Hospital Universitari. Institut d'Investigació i Innovació Parc Taulí (I3PT-CERCA), Unitat de Neurociències Traslacional I3PT-INc UAB, Institut de Neurociències. Universitat Autònoma de Barcelona. 08208 Sabadell, Spain.

Parc Taulí, 1. 08208 Sabadell, Barcelona (Spain).

E-mail: acebria@tauli.cat

Author Note

Laura Comendador Vázquez, MSc. E-mail: laura.comendador@uab.cat

ORCID 0000-0002-5221-4794

María P. Jiménez-Villamizar, MSc. E-mail: mariapaola.jimenez@autonoma.cat

ORCID 0000-0003-2264-7422

Josep-Maria Losilla, PhD. E-mail: JosepMaria.Losilla@uab.cat

ORCID 0000-0002-5140-5847

Juan P. Sanabria-Mazo, MSc. E-mail: juanpablo.sanabria@sjd.es

ORCID 0000-0003-1688-435X

Corel Mateo-Canedo, MSc. E-mail: Corel.Mateo@uab.cat

ORCID 0000-0002-0620-9257

Ana Isabel Cebrià Meca, PhD. E-mail: acebria@tauli.cat

ORCID 0000-0002-2632-8130

Antoni Sanz Ruíz, PhD. E-mail: antonio.sanz@uab.cat

ORCID 0000-0002-7952-4477

Diego J. Palao Vidal, MD, PhD. E-mail: dpalao@tauli.cat

ORCID 0000-0002-3323-6568

Word count (excluding title page, abstract, tables, acknowledgements, contributions, and references):
4231 words

1 **The effect of synchronous remote-based interventions on suicidal behaviours:**

2 **Protocol for a systematic review and meta-analysis**

3 **ABSTRACT**

4 **Introduction** Suicide is among the leading causes of preventable death worldwide. The impact
5 of suicide affects the personal, social, and economic levels. Therefore, its prevention is a priority
6 for public health systems. Previous studies seem to support the efficacy of providing active
7 contact to people who have made a suicide attempt. The current systematic review and meta-
8 analysis aim to investigate the efficacy of distance suicide prevention strategies implemented
9 through synchronous technology-based interventions.

10 **Methods and analysis** This protocol is designed according to the Preferred Reporting Items for
11 Systematic Review and Meta-Analysis Protocols (PRISMA-P). The bibliographic searches were
12 conducted in the databases PubMed, PsycInfo, Scopus, and Web of Science in April 2022, with
13 no restrictions on the time of publication and limited to publications in English or Spanish. The
14 search strategy was performed using free-text terms and Medical Subject Headings (MeSH)
15 terms: suicide, follow-up, synchronous, remote, telehealth, telephone, hotline,
16 videoconference, and text message. Two reviewers will independently conduct study screening,
17 selection process, data extraction, and risk of bias (RoB) assessment. The analysis and synthesis
18 of the results will be both qualitative and quantitative. A narrative synthesis, presented in a
19 comprehensive table, will be performed and meta-analysis will be conducted, as appropriate, if
20 sufficient data is provided.

21 **Ethics and dissemination** The present review and meta-analysis will not require ethical
22 approval, as it will use data collected from previously published primary studies. The findings of
23 this review will be published in peer-reviewed journals and widely disseminated.

24 **PROSPERO registration number** CRD42021275044.

25 **Keywords** Suicide, Telemedicine, Preventive Medicine.

26

27 STRENGTHS AND LIMITATIONS OF THE STUDY

- 28 • Study screening, quality assessment and data extraction will be determined by
29 transparency, precision, and significance according to the Preferred Reporting Items for
30 Systematic Review and Meta-Analysis (PRISMA).
- 31 • The systematic review will focus on peer-reviewed articles, and findings will be limited
32 to articles written in English or Spanish.
- 33 • Randomised clinical trials, quasi-experimental trials, and observational case-controlled
34 studies will be included to obtain sufficient data and adequate statistical power for
35 meta-analysis.
- 36 • There is a potential limitation attributed to the expected small sample size of the
37 included studies and the heterogeneity of the study designs.

39 INTRODUCTION

40 Suicide is a universal, complex, and multifaceted public health problem that ranks annually
41 among the leading causes of preventable death worldwide. More than 700,000 people die by
42 suicide per year [1], becoming the seventeenth leading cause of death in 2019 in global
43 epidemiology [2]. Annual suicide rates account for 1.4% of all deaths worldwide [3]. Suicide rates
44 in European regions (10.5 per 100,000) were higher than the global average (9.0 per 100,000) in
45 2019, while the lowest suicide rate was in the Eastern Mediterranean region (6.4 per 100,000)
46 [2, 3]. For each suicide death, there are twenty suicide attempts [4], constituting one of the
47 leading causes of disease burden in the world [5, 6]. While most of the world's suicides occur in
48 low- and middle-income countries, high-income countries have the highest age-standardised
49 suicide rate (10.9 per 100,000) [2, 3]. Moreover, suicide represents the fourth leading cause of
50 death among people aged 15-29 years in global epidemiology [1, 3]. The number of adolescent
51 deaths due to suicide has increased dramatically, with data reflecting that suicide represents a

1
2
3 52 rate per year of 0.19/100,000 in people under 15 years of age and a rate per year of
4
5 53 2.23/100,000 in the 15-19 age group, according to the Spanish National Institute of Statistics [7].
6

7 54 Suicide prevention is an emerging priority for the public health system due to its high
8
9 55 social burden [8]. Evidence suggests that a prior suicide attempt is one of the most important
10
11 56 risk factors for suicide, which supports the efforts to protect patients who attempt suicide during
12
13 57 the acute period following an episode of self-harm [9, 10]. It is estimated that 20% of people
14
15 58 who had engaged in suicidal behaviour showed a subsequent episode, and that 88% of these
16
17 59 reattempts occurred within two years of the initial episode [11]. Furthermore, a lack of follow-
18
19 60 up care provided by healthcare professionals has been identified as a risk factor for repeat
20
21 61 suicide attempts in patients discharged from the emergency department (ED) [12].
22
23

24
25 62 Over the last decades, the relevance of developing evidence-based prevention
26
27 63 strategies focused on reducing the likelihood of suicide attempts in high-risk patients has
28
29 64 become evident [13–16]. Suicide prevention programmes include a wide range of follow-up
30
31 65 actions that promote connectivity between the patient and the mental health provider (sending
32
33 66 letters, conducting telephone calls, texting via SMS, providing follow-up visits in specialised
34
35 67 healthcare centres, or implementing 24/7 hotlines) [17, 18]. The development of Information
36
37 68 and Communication Technologies (ICTs) has created opportunities and challenges in prevention,
38
39 69 research, and clinical practise. eHealth interventions represent tools that allow reaching a larger
40
41 70 number of at-risk populations, facilitating proactive follow-up compared to face-to-face
42
43 71 treatments [19].
44
45

46
47 72 Considering that remotely delivered distance-based programmes can reach affected
48
49 73 people regardless of their location, it is reasonable to expect that these interventions could be
50
51 74 part of future suicide prevention efforts [17, 18]. Remotely brief contact-based interventions
52
53 75 can be a cost-effective strategy for suicide prevention in healthcare settings [20–22]. In a recent
54
55 76 meta-analysis, Inagaki *et al.* [12] found that secondary prevention programmes involving active
56
57 77 contact and follow-up can be effective in reducing the risk of a repeat suicide attempt within six
58
59
60

1
2
3 78 months of admission to an ED for suicidal behaviour. Moreover, promising results seem to be
4
5 79 reported in studies that conduct telephone follow-up interventions for individuals at risk as a
6
7 80 suicide prevention strategy [23–30]. Telephone management in a clinical-practise setting could
8
9 81 be a useful and not expensive programme to implement in mental health centres [23, 31].

11
12 82 In 2015, Milner *et al.* [32] conducted a systematic review and meta-analyses of 14
13
14 83 randomised controlled trials (RCTs) using brief contact interventions and found that
15
16 84 considerable differences in outcomes are likely to exist depending on the intervention condition
17
18 85 and time period over which the study was conducted (i.e., studies that reported on the
19
20 86 effectiveness of the intervention condition in reducing suicide attempts were conducted some
21
22 87 decades ago and were rated as having a high risk of bias (RoB), whereas recent studies find more
23
24 88 conservative results). Given the possible benefits, low cost and unlikely adverse effects, large-
25
26 89 scale trials in clinical populations would be worthwhile; however, the authors do not
27
28 90 recommend widespread clinical implementation of brief contact interventions. In 2016, Noh *et*
29
30 91 *al.* [33] examined five RCTs comparing telephone-delivered interventions for preventing suicide
31
32 92 reattempts with no telephone intervention. The results suggest that, in the case of providing
33
34 93 telephone-delivered intervention only, more aggressive, structured, and theory-based
35
36 94 telephone interventions led by mental health professionals should be designed and examined
37
38 95 in the form of large-scale RCTs. It should be noted that there is an overlap in the studies included
39
40 96 in the Milner *et al.* [32] and Noh *et al.* [33] meta-analyses.

45 97 Although there is no clear consensus on the effect of these programmes in previous
46
47 98 systematic reviews and meta-analyses [32, 33], there are data that appear to support the
48
49 99 efficacy of providing active contact to individuals who have made a suicide attempt [12, 17, 34].

52 100 Overall, there are studies with positive results in the reduction of suicide-related outcomes [23,
53
54 101 26, 29, 30] and others that have found conflicting or inconclusive evidence [25, 35, 36],
55
56 102 suggesting the suitability of conducting a systematic review with meta-analysis of the current
57
58 103 scientific literature. Despite evidence describing a broad range of telecommunications-based
59
60

1
2
3 104 suicide prevention approaches [21, 37], we are not aware of any publications that provide a
4
5 105 synthesis of the literature on interventions that develop the use of synchronous strategies in
6
7 106 suicide prevention. Based on the concept of connectivity [34], combined with a component of
8
9 107 immediacy in the communication system; synchronous communication can increase
10
11 108 accessibility, adherence, and treatment efficacy.

12
13
14 109 This study aims to collect and synthesise information on the efficacy and effectiveness
15
16 110 of remote suicide prevention strategies implemented through technology-based synchronous
17
18 111 interventions (i.e., via digital tools that allow interactive and immediate real-time
19
20 112 communication conducted remotely).

21
22
23 113

24 114 **METHODS AND ANALYSIS**

25
26 115 The primary source used to describe the methods of this protocol was the Cochrane Handbook
27
28 116 for Systematic Reviews of Interventions (version 6.2) [38], specifically Part 2: Core methods
29
30 117 “Chapter 2: Determining the scope of the review and the questions it will address” to “Chapter
31
32 118 10: Analysing data and undertaking meta-analyses”. The protocol was constructed according to
33
34 119 the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P)
35
36 120 [39, 40] (see Supplementary File 1). A version of the protocol was registered in the International
37
38 121 Prospective Register of Systematic Reviews (PROSPERO), under identification number
39
40 122 CRD42021275044.

41
42
43 123

44 124 **Systematic review question**

45
46 125 The research question was built according to PICOS criteria (Population, Intervention,
47
48 126 Comparison, Outcomes, and deSign) [41]. In adolescents and adults (≥ 12 years of age) with
49
50 127 suicidal ideation or prior suicide attempts (P), what is the efficacy and effectiveness of
51
52 128 synchronous remote-based interventions (I) in the prevention of non-fatal suicide attempts and
53
54 129 suicide deaths (O) compared to active or inactive control groups (C) with any follow-up length?
55
56
57
58
59
60

1
2
3 130
4

5 131 **Criteria for included and excluded studies**

6
7 132 Types of studies

8
9
10 133 The review will consider published empirical research with the following study designs:
11
12 134 randomised clinical trials, quasi-experimental trials, and observational case-controlled studies.

13
14 135 Primary data from cohort study designs or qualitative studies and secondary sources (e.g.,
15
16 136 systematic reviews, meta-analyses) will be excluded.

17
18
19 137

20
21 138 Types of participants

22
23 139 The population of interest will include adolescents and adults, defined as anyone over the age
24
25 140 of 12 years, who have reported suicidal ideation or prior suicide attempts. No restriction will be
26
27 141 placed on gender, geographical provenance, or diagnosis. Participants with non-suicidal self-
28
29 142 injury will be excluded.

30
31
32 143

33
34 144 Types of interventions

35
36 145 Synchronous remote-based interventions will be defined as programmes delivered through a
37
38 146 technology device that is characterised by (a) ensuring interactive and immediate
39
40 147 communication, and (b) not requiring the patient to be at the same physical location as the
41
42 148 mental health provider. Interventions should aim to reduce suicide risk by communicating with
43
44 149 patients through telephone follow-up or active contact (i.e., contact with healthcare services
45
46 150 made spontaneously by participants at elevated risk for suicidal behaviour, such as a phone call
47
48 151 or hotline), instant text messaging, or videoconference. The synchronous remote
49
50 152 communication should include some, but not necessarily all, of the following elements:
51
52 153 improving compliance with medication and follow-up appointments, addressing any problems,
53
54 154 stressors, or risk factors, and reducing re-attempts. No restriction will be placed on the intensity
55
56 155 or duration of the intervention.
57
58
59
60

1
2
3 156 We will include interventions delivered via synchronous remote-communication
4
5 157 technologies; however, synchronous remote-based programmes that include minimal face-to-
6
7 158 face contact (i.e., in-person contact for a maximum of 1 session) or are complemented with
8
9
10 159 multimedia-delivered materials will be also considered. Studies using asynchronous
11
12 160 telecommunication devices such as online forums and communities, social networking sites,
13
14 161 video sharing sites, automated one-way text or voice messages, and self-directed web-based
15
16 162 programmes will be excluded. Studies that describe treatments focused on the prevention of
17
18 163 non-suicidal self-harm will be excluded. In addition, the interventions for issues such as
19
20 164 psychosis, eating disorders, and depression, which are not intended to specifically address
21
22 165 suicidal behaviour, are out of the scope of this review.

23
24
25 166 All comparisons identified in the eligible studies will be included, such as treatment as
26
27 167 usual (TAU), enhanced treatment as usual, no treatment, placebo, waiting list, and historical
28
29 168 control. Therefore, the review will include active (i.e., participants engaged in some tasks
30
31 169 unrelated to suicide prevention during the study period) or inactive control groups. The control
32
33 170 group may involve a combination of strategies: visits to mental health services, non-
34
35 171 psychological therapies (e.g., pharmacotherapy), and other expected interventions. Studies that
36
37 172 do not include a control group will be excluded (e.g., cross-sectional trials).

38
39
40
41 173

42 43 174 Types of outcomes measures

44
45 175 The main outcomes will be the repetition of suicide attempt, suicide ideation and suicide death.
46
47 176 Suicide is defined as a self-inflicted and potentially injurious behaviour that is performed as a
48
49 177 deliberate method to die [42]. Suicide attempts are defined as self-inflicted harm with a non-
50
51 178 fatal outcome for which there is evidence, explicit or implicit, of the intention to die [3].
52
53 179 Furthermore, suicidal ideation is described by thoughts, ideas, or ruminations about the
54
55 180 possibility of ending one's life [43].
56
57
58
59
60

181 The assessment can be conducted post-intervention with no limit on the length of
 182 follow-up, employing quantitative measurement of suicidal-related outcomes. The suicidal
 183 ideation outcome may be measured using different validated instruments (Table 1). According
 184 to a recent systematic review [44], the most common instruments are the Beck Scale for Suicide
 185 Ideation (BSI) and the Columbia Suicide Severity Rating Scale (C-SSRS). The non-fatal suicide
 186 attempts outcome will be measured by the number of suicide attempts a person has made
 187 within a certain timeframe. The suicide death outcome will be measured by the number of
 188 people who have died by suicide.

189

190 **Table 1.** Instruments most cited in the literature for assessing suicide risk.

Instrument	Reference
Beck Scale for Suicide Ideation (BSI)	Beck <i>et al.</i> [45]
The Columbia – Suicide Severity Rating Scale (C-SSRS)	Posner <i>et al.</i> [46]
Beck Suicidal Intent Scale (SIS)	Beck <i>et al.</i> [47]
Paykel Suicide Scale (PSS)	Fonseca-Pedrero <i>et al.</i> [48]
Beck Suicide Scale – worst ever version (BSSw)	Beck & Steer [49]
Suicidal Ideation Questionnaire (SIQ; SIQ-Junior)	Reynolds [50]
Mini-International Neuropsychiatric Interview (MINI)	Sheehan <i>et al.</i> [51]
Risk of Suicide Questionnaire (RSQ; RSQ-Revised)	Horowitz <i>et al.</i> [52]
Suicide Score Scale (SSS)	Innamorati <i>et al.</i> [53]
Suicide Opinion Questionnaire (SOQ)	Domino <i>et al.</i> [54]
WMH Composite International Diagnostic Interview (WMH-CIDI)	Kessler & Ustün [55]
InterSePT Suicide Scale (ISST)	Lindenmayer <i>et al.</i> [56]
Plutchik Suicide Risk Scale	Koslowsky <i>et al.</i> [57]
Harkavy-Asnis Suicide Scale (HASS)	Friedman & Asnis [58]
Suicide Probability Scale (SPS)	Cull & Gill [59]

191

192 **Data collection and analysis**

193 Information sources and search strategy

1
2
3 194 Literature searches were conducted in the following electronic databases: PubMed (by NCBI-
4
5 195 NLM-NIH website), PsycInfo (by ProQuest), Scopus (by [ww.scopus.com](http://www.scopus.com)), and Web of Science
6
7 196 Core Collection (by www.clarivate.com). Grey literature and unpublished records were searched
8
9 197 on the following websites: ClinicalTrials.gov and Google Scholar.

11
12 198 Authors of published articles will be contacted to retrieve relevant information about
13
14 199 their study that was either not reported or unclear. The references cited in the included articles
15
16 200 will be considered for data collection. We will also examine the reference lists of existing
17
18 201 systematic reviews on similar topics to identify other relevant articles. In addition, the personnel
19
20 202 files of the workgroup members will be checked and experts in the field of suicide will be
21
22 203 consulted regarding relevant publications.

23
24
25 204 The search strategy was performed using relevant subject headings and search syntax
26
27 205 appropriate to each database, including variations and combinations of free-text terms and
28
29 206 Thersaurus of psychological index terms (American Psychological Association, APA) or Medical
30
31 207 Subject Headings (MeSH) terms, combining with appropriate boolean operators. The general
32
33 208 structure of search syntax was: (suicid* OR self-injur* OR self-harm OR “self-destructive
34
35 209 behavio*” OR self-poisoning) AND (intervention OR therap* OR treatment OR psychotherap*
36
37 210 OR prevention OR follow-up OR contact OR post-discharge) AND (synchron* OR remote OR non-
38
39 211 presential OR non-face-to-face OR distance OR digital OR online OR telehealth OR telemedicine
40
41 212 OR eHealth OR mHealth OR telephone OR phone OR call OR hotline OR helpline OR “suicide line”
42
43 213 OR chat OR videoconferen* OR App OR text messag* OR SMS) AND (“randomised controlled
44
45 214 trial” OR “controlled clinical trials” OR “clinical studies”) NOT (review OR protocol). The drafted
46
47 215 electronic search strategy for PubMed database is included in the Supplementary File 2.

48
49
50
51
52 216 The search was scheduled to be completed by April 2022. All searches have been re-run,
53
54 217 before publication of the article, as more than 12 months have elapsed since the date of the
55
56 218 initial search. The search was limited to English or Spanish and was performed with no
57
58 219 restrictions on the time of publication.

1
2
3 220 The search strategy was developed by the research team with the collaboration of an
4
5 221 experienced health science librarian (GC), adhering to the Peer Review of Electronic Search
6
7 222 Strategies (PRESS) [60]. Sensitivity (i.e., retrieval rate) and specificity (i.e., precision rate) criteria
8
9
10 223 were considered in the development of the literature search strategy [61, 62]; however,
11
12 224 sensitivity was prioritised.

13
14 225

15
16 226 Data management

17
18 227 Results from the literature search will be imported into Rayyan Systems Inc. [63], an Internet-
19
20 228 based software programme that facilitates collaboration and pursuit accelerated screening
21
22 229 process. During the review process, this tool will be used to identify duplicate records and
23
24 230 manage the data. Mendeley (version 1.19.8) will be employed as reference management
25
26 231 software.

27
28
29
30 232

31
32 233 Selection process

33
34 234 In the first phase, duplicate articles in the databases will be automatically removed by Rayyan
35
36 235 Systems Inc. and manually by the first reviewer (LC). In the second phase, two authors (LC and
37
38 236 MPJ) will blind-screen all articles based on titles, abstracts, and keywords. In the third phase,
39
40 237 the two reviewers (LC and MPJ) will independently evaluate the full-text articles according to
41
42 238 eligibility criteria. The reasons for excluding articles will be recorded. If necessary, a third
43
44 239 reviewer (AS) will be requested for discrepancies that may not be resolved by consensus among
45
46 240 the two reviewers (LC and MPJ). Inter-rater agreement will be calculated by Cohen's Kappa in
47
48 241 the second and third phases, prior to reaching consensus on the discrepancies between the two
49
50 242 reviewers or contrasting them with a third reviewer. The article selection process will be
51
52 243 described in a PRISMA flow diagram [64].

53
54
55
56 244

57
58
59 245 Data collection process

1
2
3 246 Data extraction will be conducted independently by two authors (LC and MPJ), using a standard
4
5 247 extraction form in line with the template from The Cochrane Collaboration [65]. Data will be
6
7 248 managed using Microsoft Excel (16.56 version). For missing information or data that needs to
8
9 249 be clarified, first or corresponding authors of primary studies will be contacted by email; one
10
11 250 follow-up email will be sent if no response is received to the first email.
12
13

14 251

15
16 252 Data items

17
18 253 Data will be extracted from the following categories: a) general characteristics of the study
19
20 254 (authors, date of publication, setting and geographic location, research design, sample size,
21
22 255 participant sociodemographic and baseline characteristics), b) intervention and control group
23
24 256 details (type of intervention or control group, sample sizes, follow-up time, dropout rates), c)
25
26 257 outcomes (descriptive and comparative statistical indexes of efficacy and effectiveness,
27
28 258 assessment measures, and procedures), and d) limitations reported by study authors.
29
30

31
32 259

33
34 260 **Risk of bias assessment**

35
36 261 The RoB assessment will be conducted independently by two reviewers (LC and MPJ), employing
37
38 262 the Revised Cochrane risk-of-bias tool for randomised trials (RoB 2.0) [66], and Risk-of-bias In
39
40 263 Non-randomised Studies – of Interventions (ROBINS-I) [67].
41
42

43 264 Inter-rater agreement will be calculated by Cohen's Kappa. Disagreements will be
44
45 265 resolved by consensus with a third blind reviewer (AS). Ratings of bias for each study will be
46
47 266 classified as low, high, or unclear RoB, according to standardised methodology. Intra-
48
49 267 methodological quality evaluation will be synthesised in tables that will comprise the summary
50
51 268 of each study individually, identifying their RoB. Studies will not be excluded based on their level
52
53 269 of RoB.
54
55

56
57 270

58
59 271 **Data synthesis**
60

1
2
3 272 A descriptive summary and explanation of the characteristics and findings of all included studies
4
5 273 will be displayed in a comprehensive table. A narrative synthesis will be conducted, and a
6
7 274 random-effects meta-analysis will be computed when a suicidal-related outcome is reported in
8
9 275 at least three studies. To ensure that the data we are combining from different studies is
10
11 276 comparable and can be appropriately synthesised, several adjustments may be necessary. These
12
13 277 adjustments could involve contacting study authors to request more detailed data or
14
15 278 transforming the data (e.g., if we encounter a situation where some studies report suicide
16
17 279 attempts as a binary outcome while others report them as a count); conducting sensitivity
18
19 280 analyses to assess the impact of the articles; performing subgroup analyses for each type of
20
21 281 data; or adopting a narrative synthesis approach when a quantitative combination of studies is
22
23 282 not feasible. Any data transformations will be documented in the manuscript, and the
24
25 283 limitations introduced by differences in data reporting between studies should be
26
27 284 acknowledged.

28 285 Three types of meta-analyses will be conducted according to the type of outcome
29
30 286 measure: count (incidence rate ratio between groups of the number of suicide attempts),
31
32 287 quantitative (standardised mean differences of suicidal ideation), and binary (odds-ratio
33
34 288 between groups in the proportion of deaths by suicide). All outcomes will be analysed at
35
36 289 different follow-up time intervals, as indicated below in the description of subgroup analyses.
37
38 290 Comparisons adjusted for confounders between groups will be included in meta-analyses when
39
40 291 reported in studies, and the effect of these adjustments on the meta-analytic summary will be
41
42 292 studied using sensitivity and subgroup analyses. Mean differences between the control group
43
44 293 and intervention group will be transformed into Hedges' g standardised effect sizes [68], which
45
46 294 means different tools for measuring suicidal ideation will be combined. Effect sizes will be
47
48 295 considered small ($g \geq 0.2$), medium ($g \geq 0.5$), or large ($g \geq 0.8$) [69]. The Q and Tau^2 statistics will
49
50 296 be calculated to assess the statistical heterogeneity of effect sizes. Specific functions will be used
51
52 297 to examine: (a) the profile likelihood plots of the variance components; (b) the potential outlying
53
54
55
56
57
58
59
60

1
2
3 298 and influential studies and/or outcomes; and (c) the potential publication bias. All analyses will
4
5 299 be performed using the Metafor package (version 4.0-0) for R.
6

7
8 300

9
10 301 Sensitivity analysis

11
12 302 The potential effect on the results due to the trial design (i.e., pragmatic vs. explanatory trials),
13
14 303 the adjustment for confounding, and the RoB of the studies will be analysed, if feasible.
15

16
17 304

18
19 305 Analysis of subgroups or subsets

20
21 306 Subgroup and subset analyses will be carried out if feasible and warranted to examine potential
22
23 307 effect modifiers based on sociodemographic characteristics of participants, length, type of
24
25 308 treatment, research design, adjustment for confounding, and RoB assessment. Meta-regression
26
27 309 will be performed to analyse quantitative potential effect modifiers or covariates that might
28
29 310 influence the size of the intervention effect (e.g., age). We plan to summarise and categorise
30
31 311 the below subgroup or subset analyses if there is enough data:

32
33
34 312 a) Age: adolescents (12 to 17 years of age), adults (18 to 65 years of age), and older adults
35
36 313 (over 65 years of age).

37
38
39 314 b) Type of intervention: type of synchronous remote-based interventions (telephone calls,
40
41 315 instant text messaging, 24/7 hotlines, videoconferencing).

42
43 316 c) Number of follow-up contacts: hotline (24-hour consultation with a non-standardised
44
45 317 number of follow-up contacts), 1 to 3 contacts, 3 to 6 contacts, and more than 6
46
47 318 contacts.

48
49
50 319 d) Length of contact period: hotlines (24-hour consultation with a non-standardised period
51
52 320 of follow-up contacts), up to 1-month follow-up, 1 to 3-month follow-up, 3 to 6-month
53
54 321 follow-up, and longer than 6-month follow-up.

55
56
57 322 e) Research design: RCTs, quasi-experimental trials, and observational case-controlled
58
59 323 studies.
60

- 1
2
3 324 f) Adjustment for confounding: adjusted for confounding variables, or no adjustment.
4
5 325 g) RoB assessment: low, high, and unclear RoB.
6
7 326
8
9

10 327 **Publication bias**

11
12 328 Publication bias will be evaluated using Egger's test [70], funnel plots [71], and trim-and-fill
13
14 329 approaches [72].
15

16 330

17
18 331 **Confidence in cumulative evidence**

19
20 332 The overall quality of evidence will be evaluated according to the Grading of Recommendations
21
22 333 Assessment, Development, and Evaluation (GRADE) [73, 74] by two independent researchers
23
24 334 (LC and MPJ). Discrepancies will be resolved in a discussion with a third researcher (AS).
25
26 335

27
28 336

29 337 **Patient and public involvement**

30
31 338 Patients and/or the public were not involved in the design, conduct, reporting, or dissemination
32
33 339 plans of this research.
34
35 340

36 341

37 342 **DISCUSSION**

38
39 343 The wide variety of remotely delivered distance-based programmes for suicide prevention [20,
40
41 344 23, 26–28] and the current lack of guidance on their implementation warrant further research
42
43 345 to improve and standardise patient care.
44
45 346

46
47 347 To the best of the researchers' knowledge, no systematic review and meta-analysis has
48
49 348 been reported that examined the efficacy of synchronous and remote telepsychiatry
50
51 349 interventions, assessing suicide-specific outcomes. We aim to address a gap in research by
52
53 350 examining the efficacy of synchronous remote-based interventions that are specifically designed
54
55 351 for suicide prevention. The proposed approach is pertinent given the recent increase in the
56
57 352 development and usage of technology communication devices for this purpose [19].
58
59 353
60

1
2
3 350 It is anticipated that the systematic review will have predicted limitations that should be
4
5 351 considered. The inconsistency of terms used in suicidology is a limiting factor regarding the
6
7 352 search for articles and the subsequent eligibility of studies. In addition, suicide is a rare event,
8
9
10 353 making the design of studies with high statistical power particularly challenging. Furthermore,
11
12 354 people who attempt suicide are typified by poor treatment-seeking and limited adherence to
13
14 355 treatment [75], making it important to provide individuals at risk of suicide with appropriate and
15
16 356 cost-effectiveness treatment options.

17
18
19 357 A limited number of available studies is expected, which explains why the search
20
21 358 strategy prioritises sensitivity over specificity. Moreover, RCTs may not provide sufficient
22
23 359 evidence to exclude data from non-randomised studies. The inclusion of studies examining a
24
25 360 wide range of synchronous remote-communication technologies rather than a specific
26
27 361 intervention is intended to address this issue. Similarly, including no restriction on the mental
28
29 362 health condition should allow for the collection of comprehensive and relevant data. Research
30
31 363 studies that meet eligibility criteria may have a substantial degree of heterogeneity. In response,
32
33 364 we initially planned subgroup and subset analyses. However, the categorisation of interventions
34
35 365 into different typologies may be difficult since multiple research studies combine several
36
37 366 interventions simultaneously.

38
39
40
41 367 Aside from several limitations, there are potential strengths. The aim is to contribute to
42
43 368 the body of evidence on suicide. The development of the research proposed in the present
44
45 369 protocol will allow to analyse the quality and methodology used in the research of remote-based
46
47 370 synchronous interventions for suicide prevention, synthesizing scientific evidence, generating
48
49 371 hypotheses, and establishing lines of research. In addition, the study protocol per se will provide
50
51 372 more transparency in the methods and processes involved, decrease the possibility of
52
53 373 duplication, and reduce bias. The meta-analysis of the studies found can allow the quantification
54
55 374 of their global efficacy and effectiveness. Likewise, the subgroups or subsets analyses can
56
57
58
59
60

1
2
3 375 provide useful information to guide the design of more efficient and effective efficacy or
4
5 376 effectiveness of remote-based synchronous programs for suicide prevention in the future.

6
7 377 The current registration of the protocol for this review at PROSPERO may undergo
8
9 378 changes, if approved by all authors. Any changes to the protocol will be described and explained
10
11 379 in the final manuscript. The research has been previously presented at a conference and has
12
13 380 been published as a conference abstract [76].
14
15

16 381

17 382 **ETHICS AND DISSEMINATION**

18
19
20 383 Ethics approval is not needed, as systematic reviews are based on published studies. The results
21
22 384 will be disseminated through peer-reviewed publications.
23
24

25 385

26 386 **Ethics statements**

27
28 387 Patient consent for publication

29
30 388 Not applicable.
31
32

33 389

34
35
36 390 **Contributors** AS is the guarantor. LC, JML, DP, AC, and AS: Writing - Original Draft. LC, AS, MPJ,
37
38 391 JPS, and CM: Software. LC, JML, DP and AS: Project administration, Supervision. All authors:
39
40 392 Conceptualization, Methodology, Writing - Review & Editing. JML, AS, JPS, and CM provided
41
42 393 statistical expertise. DP and AC provided expertise on suicidal behaviours. All authors approved
43
44 394 the final manuscript.
45
46

47 395

48
49
50 396 **Acknowledgements** Authors' thanks Guillem Cebrián (GC), director of the Library Hospital
51
52 397 Universitari Parc Taulí and head of the Unitat de Gestió del Coneixement de l'Institut
53
54 398 d'Investigació i Innovació Parc Taulí (I3PT-CERCA), for his invaluable support in the refinement
55
56 399 of the search strategies. Authors' gratitude goes to Universitat Autònoma de Barcelona and
57
58 400 Hospital Universitari Parc Taulí for critically analysing the study proposal and motivational
59
60

1
2
3 401 support to conduct this protocol. DP thanks the support of Spanish Ministry of Science and
4
5 402 Innovation/ISCIII/FEDER (PI21/01148); the Secretaria d'Universitats i Recerca del Departament
6
7 403 d'Economia i Coneixement of the Generalitat de Catalunya (2021 SGR 01431); the CERCA
8
9 404 programme of the I3PT; the Instituto de Salud Carlos III; and the CIBER of Mental Health
10
11 405 (CIBERSAM). The research has been previously presented at a conference and has been
12
13 406 published as a conference abstract [76].
14
15
16
17 407

18
19 408 **Funding** This research was funded by the Instituto de Salud Carlos III, Subdirección General de
20
21 409 Evaluación y Fomento de la Investigación (ISCIII) and Fondo Europeo de Desarrollo Regional
22
23 410 (FEDER), grant number PI21/01148 - Estudio de la relación entre cognición social y dolor
24
25 411 psicológico con el riesgo de presentar conductas suicidas (COGNISUI) - Fundación Parc Taulí.
26
27 412 SENDO PI21/01148 (Fondo de Investigación Sanitaria-ISCiii/FEDER) Instituto Salud Carlos III, and
28
29 413 by MCIN/AEI/10.13039/501100011033 and "ERDF A way of making Europe", grant number
30
31 414 PID2022-141403NB-I00. The APC was funded by the Instituto de Salud Carlos III, Subdirección
32
33 415 General de Evaluación y Fomento de la Investigación (ISCIII) and Fondo Europeo de Desarrollo
34
35 416 Regional (FEDER). The funders had no role in the design of the study; in the collection, analysis,
36
37 417 or interpretation of data; in the writing of the manuscript; or in the decision to publish the
38
39 418 results. The Department of Mental Health of Hospital Universitari Parc Taulí, Unitat Mixta de
40
41 419 Neurociència Traslacional I3PT-INc-UAB, is the sponsor.
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

420

421 **Competing interests** D.P. has received grants and also served as a consultant or advisor for Rovi,
422 Angelini, Janssen, Lundbeck and Servier. The other authors declare no conflicts of interest.

423

424

425 **Patient consent for publication** Not applicable.

426

1
2
3 427 **Provenance and peer review** Not commissioned; externally peer reviewed.
4

5 428

6
7 429 **Supplemental material** Supplementary File 1. PRISMA-P 2015 Checklist (DOCX 35 KB).
8

9 430 Supplementary File 2. PubMed search strategy (DOCX 14 KB).
10
11

12 431

13
14 432 **Open access** This is an open access article distributed in accordance with the Creative Commons
15

16 433 Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix,
17

18 434 adapt, build upon this work non-commercially, and license their derivative works on different
19

20 435 terms, provided the original work is properly cited, appropriate credit is given, any changes are
21

22 436 made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by->
23

24 437 [nc/4.0/](http://creativecommons.org/licenses/by-nc/4.0/).
25
26

27 438

28
29 439 **ORCID iDs**

30 440 Laura Comendador Vázquez <https://orcid.org/0000-0002-5221-4794>
31
32

33 441 María P. Jiménez-Villamizar <https://orcid.org/0000-0003-2264-7422>
34
35

36 442 Josep-Maria Losilla <https://orcid.org/0000-0002-5140-5847>
37
38

39 443 Juan P. Sanabria-Mazo <https://orcid.org/0000-0003-1688-435X>
40
41

42 444 Corel Mateo-Canedo <https://orcid.org/0000-0002-0620-9257>
43
44

45 445 Ana Isabel Cebrià Meca <https://orcid.org/0000-0002-2632-8130>
46
47

48 446 Antoni Sanz Ruíz <https://orcid.org/0000-0002-7952-4477>
49
50

51 447 Diego J. Palao Vidal <https://orcid.org/0000-0002-3323-6568>
52
53

54 448

55 449 **REFERENCES**

56 450 1. World Health Organization. Suicide [online]. 2021. <https://www.who.int/news-room/fact->
57

58 451 [sheets/detail/suicide](https://www.who.int/news-room/fact-sheets/detail/suicide) (accessed 30 Jan 2022).
59
60

- 1
2
3 452 2. World Health Organization. Suicide worldwide in 2019 [online]. 2021.
4
5 453 <https://www.who.int/publications-detail-redirect/9789240026643> (accessed 30 Jan 2022).
6
7 454 3. World Health Organization. Suicide in the world: Global health estimates [online]. 2019.
8
9 455 <https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3->
10
11 [eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3-eng.pdf?sequence=1&isAllowed=y) (accessed 30 Jan 2022).
12
13 456
14 457 4. Artieda-Urrutia P, Parra-Urbe I, Garcia-Pares G, *et al.* Management of suicidal behaviour: Is
15
16 458 the world upside down? *Aust N Z J Psychiatry* 2014;48:399–401.
17
18 459 <https://doi.org/10.1177/0004867414525847>
19
20 460 5. Mokdad AH, Forouzanfar MH, Daoud F, *et al.* Global burden of diseases, injuries, and risk
21
22 461 factors for young people’s health during 1990–2013: A systematic analysis for the Global
23
24 462 Burden of Disease Study 2013. *Lancet* 2016;387:2383–401. <https://doi.org/10.1016/S0140->
25
26 463 [6736\(16\)00648-6](https://doi.org/10.1016/S0140-6736(16)00648-6)
27
28 464 6. Parra-Urbe I, Blasco-Fontecilla H, García-Parés G, *et al.* Attempted and completed suicide:
29
30 465 Not what we expected? *J Affect Disord* 2013;150:840–6.
31
32 466 <https://doi.org/10.1016/j.jad.2013.03.013>
33
34 467 7. Instituto Nacional de Estadística. Defunciones según la causa de muerte 2017 [online]. 2021.
35
36 468 <https://www.ine.es/jaxi/Datos.htm?path=/t15/p417/a2017/l0/&file=05008.px> (accessed
37
38 469 11 Mar 2022).
39
40 470 8. Zalsman G, Hawton K, Wasserman D, *et al.* Evidence-based national suicide prevention
41
42 471 taskforce in Europe: A consensus position paper. *Eur Neuropsychopharmacol* 2017;27:418–
43
44 472 21. <https://doi.org/10.1016/j.euroneuro.2017.01.012>
45
46 473 9. Olfson M, Wall M, Wang S, *et al.* Suicide following deliberate self-harm. *Am J Psychiat*
47
48 474 2017;174:765–74. <https://doi.org/10.1176/appi.ajp.2017.16111288>
49
50 475 10. Shand F, Vogl L, Robinson J. Improving patient care after a suicide attempt. *Australas*
51
52 476 *Psychiatry* 2018;26:145–8. <https://doi.org/10.1177/1039856218758560>
53
54
55
56
57
58
59
60

- 1
2
3 477 11. Parra-Uribe I, Blasco-Fontecilla H, Garcia-Parés G, *et al.* Risk of re-attempts and suicide death
4
5 478 after a suicide attempt: A survival analysis. *BMC Psychiatry* 2017;17:163.
6
7 479 <https://doi.org/10.1186/s12888-017-1317-z>
8
9
10 480 12. Inagaki M, Kawashima Y, Yonemoto N, *et al.* Active contact and follow-up interventions to
11
12 481 prevent repeat suicide attempts during high-risk periods among patients admitted to
13
14 482 emergency departments for suicidal behavior: A systematic review and meta-analysis. *BMC*
15
16 483 *Psychiatry* 2019;19:44. <https://doi.org/10.1186/s12888-019-2017-7>
17
18
19 484 13. Ganz D, Braquehais MD, Sher L. Secondary Prevention of Suicide. *PLoS Med*
20
21 485 2010;7:e1000271. <https://doi.org/10.1371/journal.pmed.1000271>
22
23 486 14. World Health Organization. The European Mental Health Action Plan 2013–2020 [online].
24
25 487 2013. [https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf)
26
27 488 [Mental-Health-Acion-Plan-2013-2020.pdf](https://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf) (accessed 15 Feb 2022).
28
29
30 489 15. World Health Organization. Preventing suicide: A global imperative [online]. 2014.
31
32 490 https://www.who.int/mental_health/suicide-prevention/exe_summary_english.pdf?ua=1
33
34 491 (accessed 15 Feb 2022).
35
36 492 16. World Health Organization. Comprehensive mental health action plan 2013–2030 [online].
37
38 493 2021. <https://apps.who.int/iris/rest/bitstreams/1371507/retrieve> (accessed 15 Feb 2022).
39
40
41 494 17. Inagaki M, Kawashima Y, Kawanishi C, *et al.* Interventions to prevent repeat suicidal
42
43 495 behavior in patients admitted to an emergency department for a suicide attempt: A meta-
44
45 496 analysis. *J Affect Disord* 2015;175:66–78. <https://doi.org/10.1016/j.jad.2014.12.048>
46
47
48 497 18. Zalsman G, Hawton K, Wasserman D, *et al.* Suicide prevention strategies revisited: 10-year
49
50 498 systematic review. *Lancet Psychiatry* 2016;3:646–59. [https://doi.org/10.1016/S2215-](https://doi.org/10.1016/S2215-0366(16)30030-X)
51
52 499 [0366\(16\)30030-X](https://doi.org/10.1016/S2215-0366(16)30030-X)
53
54
55 500 19. Lin T, Stone SJ, Heckman TG, *et al.* Zoom-in to zone-out: Therapists report less therapeutic
56
57 501 skill in telepsychology versus face-to-face therapy during the COVID-19 pandemic.
58
59 502 *Psychotherapy* 2021;58:449. <http://dx.doi.org/10.1037/pst0000398>
60

- 1
2
3 503 20. Gilat I, Shahar G. Emotional first aid for a suicide crisis: Comparison between telephonic
4
5 504 hotline and Internet. *Psychiatry-Interpers Biol Process* 2007;70:12–8.
6
7 505 <https://doi.org/10.1521/psyc.2007.70.1.12>
8
9
10 506 21. Seong JM, Cho Y, Cho GC, *et al.* Effects of mobile messenger counseling on case management
11
12 507 success for individuals engaging in self-harm or suicide attempts who were discharged from
13
14 508 emergency departments. *Clin Exp Emerg Med* 2021;8:48–54.
15
16 509 <https://doi.org/10.15441/CEEM.20.133>
17
18
19 510 22. Vijayakumar L, Umamaheswari C, Shujaath Ali Z, *et al.* Intervention for suicide attempters:
20
21 511 A randomized controlled study. *Indian J Psychiatry* 2011;53:244–8.
22
23 512 <https://doi.org/10.4103/0019-5545.86817>
24
25
26 513 23. Cebrià AI, Parra I, Pàmias M, *et al.* Effectiveness of a telephone management programme
27
28 514 for patients discharged from an emergency department after a suicide attempt: Controlled
29
30 515 study in a Spanish population. *J Affect Disord* 2013;147:269–76.
31
32 516 <https://doi.org/10.1016/j.jad.2012.11.016>
33
34
35 517 24. Cedereke M, Monti K, Öjehagen A. Telephone contact with patients in the year after a
36
37 518 suicide attempt: Does it affect treatment attendance and outcome? A randomised
38
39 519 controlled study. *Eur Psychiat* 2002;17:82–91. [https://doi.org/10.1016/S0924-](https://doi.org/10.1016/S0924-9338(02)00632-6)
40
41 520 [9338\(02\)00632-6](https://doi.org/10.1016/S0924-9338(02)00632-6)
42
43
44 521 25. De Leo D, Buono MD, Dwyer J. Suicide among the elderly: The long-term impact of a
45
46 522 telephone support and assessment intervention in northern Italy. *Br J Psychiatry*
47
48 523 2002;181:226–9. <https://doi.org/10.1192/bjp.181.3.226>
49
50
51 524 26. Fleischmann A, Bertolote JM, Wasserman D, *et al.* Effectiveness of brief intervention and
52
53 525 contact for suicide attempters: A randomized controlled trial in five countries. *Bull World*
54
55 526 *Health Organ* 2008;86:703–9. <https://doi.org/10.2471/BLT.07.046995>
56
57
58
59
60

- 1
2
3 527 27. Gould MS, Munfakh JLH, Kleinman M, *et al.* National Suicide Prevention Lifeline: Enhancing
4
5 528 mental health care for suicidal individuals and other people in crisis. *Suicide Life-Threat*
6
7 529 *Behav* 2012;42:22–35. <https://doi.org/10.1111/j.1943-278X.2011.00068.x>
8
9
10 530 28. Miller IW, Camargo CA, Arias SA, *et al.* Suicide prevention in an emergency department
11
12 531 population: The ED-SAFE study. *JAMA Psychiatry* 2017;74:563-70.
13
14 532 <https://doi.org/10.1001/jamapsychiatry.2017.0678>
15
16 533 29. Mousavi S, Zohreh R, Sharbafchi M, *et al.* The efficacy of telephonic follow up in prevention
17
18 534 of suicidal reattempt in patients with suicide attempt history. *Adv Biomed Res* 2014;3:198.
19
20 535 <https://doi.org/10.4103/2277-9175.142043>
21
22
23 536 30. Vaiva G, Ducrocq F, Meyer P, *et al.* Effect of telephone contact on further suicide attempts
24
25 537 in patients discharged from an emergency department: Randomised controlled study. *BMJ*
26
27 538 2006;332:1241–5. <https://doi.org/10.1136/bmj.332.7552.1241>
28
29
30 539 31. Cebrià AI, Pérez-Bonaventura I, Cuijpers P, *et al.* Telephone management program for
31
32 540 patients discharged from an emergency department after a suicide attempt. *Crisis*
33
34 541 2015;36:345–52. <https://doi.org/10.1027/0227-5910/a000331>
35
36
37 542 32. Milner AJ, Carter G, Pirkis J, *et al.* Letters, green cards, telephone calls and postcards:
38
39 543 Systematic and meta-analytic review of brief contact interventions for reducing self-harm,
40
41 544 suicide attempts and suicide. *Br J Psychiatry* 2015;206:184–90.
42
43 545 <https://doi.org/10.1192/bjp.bp.114.147819>
44
45
46 546 33. Noh D, Park YS, Oh EG. Effectiveness of telephone-delivered interventions following suicide
47
48 547 attempts: A systematic review. *Arch Psychiatr Nurs* 2016;30:114–9.
49
50 548 <https://doi.org/10.1016/j.apnu.2015.10.012>
51
52
53 549 34. Luxton DD, June JD, Comtois KA. Can postdischarge follow-up contacts prevent suicide and
54
55 550 suicidal behavior? A Review of the Evidence. *Crisis* 2013;34:32–41.
56
57 551 <https://doi.org/10.1027/0227-5910/a000158>
58
59
60

- 1
2
3 552 35. Bertolote JM, Fleischmann A, De Leo D, *et al.* Repetition of suicide attempts data from
4
5 553 emergency care settings in five culturally different low- and middle-income countries
6
7 554 participating in the WHO SUPRE-MISS study. *Crisis* 2010;31:194–201.
8
9 555 <https://doi.org/10.1027/0027-5910/a000052>
11
12 556 36. Mouaffak F, Marchand A, Castaigne E, *et al.* OSTA program: A French follow up intervention
13
14 557 program for suicide prevention. *Psychiatry Res* 2015;230:913–8.
15
16 558 <https://doi.org/10.1016/j.psychres.2015.11.024>
17
18 559 37. Krysinska KE, De Leo D. Telecommunication and suicide prevention: Hopes and challenges
19
20 560 for the new century. *Omega-J Death Dying* 2007;55:237–53.
21
22 561 <https://doi.org/10.2190/OM.55.3.e>
23
24 562 38. Higgins JPT, Thomas J, Chandler J, *et al.* Cochrane Handbook for Systematic Reviews of
25
26 563 Interventions version 6.2. [online]. 2021. <https://training.cochrane.org/handbook>
27
28 564 (accessed 30 Jan 2022).
29
30 565 39. Moher D, Shamseer L, Clarke M, *et al.* Preferred reporting items for systematic review and
31
32 566 meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;4.
33
34 567 <https://doi.org/10.1186/2046-4053-4-1>
35
36 568 40. Shamseer L, Moher D, Clarke M, *et al.* Preferred reporting items for systematic review and
37
38 569 meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ*
39
40 570 2015;349:g7647–7. <https://doi.org/10.1136/bmj.g7647>
41
42 571 41. Saimbert M. Developing clinical questions for a systematic review. In: Holly C, Salmond S,
43
44 572 Saimbert M, eds. *Comprehensive Systematic Review for Advanced Practice Nursing*. 3rd ed.
45
46 573 United States, USA: Springer Publishing Company 2021:85–101.
47
48 574 <https://doi.org/10.1891/9780826152268.0005>
49
50 575 42. Gómez A, Silva H, Amon R. *El Suicidio. Teoría, Clínica y Manejo*. Barcelona, ES: Editorial
51
52 576 Mediterráneo 2018.
53
54
55
56
57
58
59
60

- 1
2
3 577 43. World Health Organization. ICD-11 for mortality and morbidity statistics [online]. 2021.
4
5 578 <https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/778734771> (accessed
6
7 579 15 Feb 2022).
- 8
9
10 580 44. Andreotti ET, Ipuchima JR, Cazella SC, *et al.* Instruments to assess suicide risk: a systematic
11
12 581 review. *Trends Psychiatry Psychother* 2020;42:276-281. [https://doi.org/10.1590/2237-](https://doi.org/10.1590/2237-6089-2019-0092)
13
14 582 [6089-2019-0092](https://doi.org/10.1590/2237-6089-2019-0092)
- 15
16 583 45. Beck AT, Kovacs M, Weissman A. Assessment of suicidal ideation: the scale for suicidal
17
18 584 ideation. *J Consult Clin Psychol* 1979;47:343-352. [https://doi.org/10.1037//0022-](https://doi.org/10.1037//0022-006x.47.2.343)
19
20 585 [006x.47.2.343](https://doi.org/10.1037//0022-006x.47.2.343)
- 21
22
23 586 46. Posner K, Brent D, Lucas C, *et al.* Columbia-Suicide Severity Rating Scale (C-SSRS). New York,
24
25 587 USA: Columbia University Medical Center 2008.
- 26
27
28 588 47. Beck AT, Schuyler D, Herman I. Development of suicidal intent scales. In: Beck AT, Resnik
29
30 589 HLP, Lettieri DJ, eds. *The Prediction of Suicide*. Philadelphia, PA: Charles Press 1974:45-56.
- 31
32 590 48. Fonseca-Pedrero E, Pérez de Albéniz A. Evaluación de la conducta suicida en adolescentes:
33
34 591 A propósito de la escala Paykel de suicidio. *Papeles del Psicol* 2020; 41:106-115.
35
36 592 <https://dx.doi.org/10.23923/pap.psicol2020.2928>
- 37
38
39 593 49. Beck AT, Steer RA. *Manual for the Beck scale for suicide ideation*. San Antonio, TX:
40
41 594 Psychological Corporation 1991.
- 42
43 595 50. Reynolds WM. *Suicidal ideation questionnaire (SIQ)*. Odessa, UKR: Psychological Assessment
44
45 596 Resources 1987.
- 46
47
48 597 51. Sheehan DV, Lecrubier Y, Sheehan KH, *et al.* The Mini-International Neuropsychiatric
49
50 598 Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric
51
52 599 interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59 Suppl 20:22-33.
- 53
54 600 52. Horowitz LM, Wang PS, Koocher GP, *et al.* Detecting suicide risk in a pediatric emergency
55
56 601 department: development of a brief screening tool. *Pediatrics* 2001;107:1133-7.
57
58 602 <https://doi.org/10.1542/peds.107.5.1133>

- 1
2
3 603 53. Innamorati M, Pompili M, Lester D, *et al.* Recreational drug use and suicidality among Italian
4
5 604 young adults. *J Addict Dis* 2008;27:51-9. <https://doi.org/10.1080/10550880802324796>
6
7 605 54. Domino G, Moore D, Westlake L, *et al.* Attitudes toward suicide: a factor analytic approach.
8
9 606 *J Clin Psychol* 1982;38:257-62. [https://doi.org/10.1002/1097-4679\(198204\)38:2<257::aid-](https://doi.org/10.1002/1097-4679(198204)38:2<257::aid-)
10
11 607 [jclp2270380205>3.0.co;2-i](https://doi.org/10.1002/1097-4679(198204)38:2<257::aid-jclp2270380205>3.0.co;2-i)
12
13 608 55. Kessler RC, Ustün TB. The World Mental Health (WMH) Survey Initiative Version of the World
14
15 609 Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J*
16
17 610 *Methods Psychiatr Res* 2004;13:93-121. <https://doi.org/10.1002/mpr.168>
18
19 611 56. Lindenmayer JP, Czobor P, Alphas L, *et al.* The InterSePT scale for suicidal thinking reliability
20
21 612 and validity. *Schizophr Res* 2003;63:161-70. [https://doi.org/10.1016/s0920-9964\(02\)00335-](https://doi.org/10.1016/s0920-9964(02)00335-3)
22
23 613 [3](https://doi.org/10.1016/s0920-9964(02)00335-3)
24
25 614 57. Koslowsky M, Bleich A, Greenspoon A, *et al.* Assessing the validity of the Plutchik Suicide
26
27 615 Risk Scale. *J Psychiatr Res* 1991;25:155-8. [https://doi.org/10.1016/0022-3956\(91\)90019-7](https://doi.org/10.1016/0022-3956(91)90019-7)
28
29 616 58. Friedman JMH, Asnis GM. Assessment of suicidal behavior: A new instrument. *Psychiatr Ann*
30
31 617 1989;19:382–387. <https://doi.org/10.3928/0048-5713-19890701-11>
32
33 618 59. Cull JG, Gill WW. Suicide Probability Scale (SPS) Manual. Los Angeles, USA: Western
34
35 619 Psychological Services 1988.
36
37 620 60. McGowan J, Sampson M, Salzwedel DM, *et al.* PRESS Peer Review of Electronic Search
38
39 621 Strategies: 2015 Guideline Statement. *J Clin Epidemiol* 2016;75:40–6.
40
41 622 <https://doi.org/10.1016/j.jclinepi.2016.01.021>
42
43 623 61. Amezcua M. La Búsqueda Bibliográfica en diez pasos. *Index Enferm* 2015;24:14-14.
44
45 624 <https://dx.doi.org/10.4321/S1132-12962015000100028>
46
47 625 62. Rada GG, Andrade AM, Leyton-Sch V, *et al.* Búsqueda de información en medicina basada
48
49 626 en evidencia. *Rev méd Chile* 2004;132:253-259. <https://doi.org/10.4067/S0034->
50
51 627 [98872004000200016](https://doi.org/10.4067/S0034-98872004000200016)
52
53
54
55
56
57
58
59
60

- 1
2
3 628 63. Ouzzani M, Hammady H, Fedorowicz Z, *et al.* Rayyan—a web and mobile app for systematic
4
5 629 reviews. *Syst Rev* 2016;5(1):1-10. <https://doi.org/10.1186/s13643-016-0384-4>
6
7 630 64. Moher D, Liberati A, Tetzlaff J, *et al.* Preferred reporting items for systematic reviews and
8
9 631 meta-analyses: The PRISMA statement. *Int J Surg* 2010;8:336–41.
10
11 632 <https://doi.org/10.1016/j.ijsu.2010.02.007>
12
13
14 633 65. The Cochrane Collaboration. Data collection form for intervention reviews for RCTs and non-
15
16 634 RCTs – template [online]. 2019. <https://dplp.cochrane.org/data-extraction-forms> (accessed
17
18 635 30 Feb 2022).
19
20
21 636 66. Sterne JA, Savović J, Page MJ, *et al.* RoB 2: A revised tool for assessing risk of bias in
22
23 637 randomised trials. *BMJ* 2019;366:l4898. <https://doi.org/10.1136/bmj.l4898>
24
25 638 67. Sterne JA, Hernán MA, Reeves BC, *et al.* ROBINS-I: A tool for assessing risk of bias in non-
26
27 639 randomised studies of interventions. *BMJ* 2016;366:i4919.
28
29 640 <https://doi.org/10.1136/bmj.i4919>
30
31
32 641 68. Hedges LV. Distribution Theory for Glass's Estimator of Effect Size and Related Estimators. *J*
33
34 642 *Stat Educ* 1981;6:107-128. <https://doi.org/10.2307/1164588>
35
36
37 643 69. Cohen J. Statistical Power Analysis for the Behavioral Sciences. New York, US: Lawrence
38
39 644 Erlbaum Associates 1988.
40
41 645 70. Egger M, Smith GD, Schneider M, *et al.* Bias in meta-analysis detected by a simple, graphical
42
43 646 test. *BMJ* 1997;315:629–34. <https://doi.org/10.1136/bmj.315.7109.629>
44
45
46 647 71. Liu JL. The role of the funnel plot in detecting publication and related biases in meta-analysis.
47
48 648 *Evid-Based Dent* 2011;12(4):121–2. <https://doi.org/10.1038/sj.ebd.6400831>
49
50 649 72. Shi L, Lin L. The trim-and-fill method for publication bias: practical guidelines and
51
52 650 recommendations based on a large database of meta-analyses. *Medicine (Baltimore)*
53
54 651 2019;98:e15987. <https://doi.org/10.1097/MD.00000000000015987>
55
56
57
58
59
60

- 1
2
3 652 73. Schünemann H, Brożek J, Guyatt G, *et al*. GRADE Handbook for Grading Quality of Evidence
4
5 653 and Strength of Recommendations [online]. 2013.
6
7 654 <https://gdt.gradepro.org/app/handbook/handbook.html> (accessed 30 Feb 2022).
8
9
10 655 74. Ryan R, Hill S. How to GRADE the quality of the evidence. Cochrane Consumers and
11
12 656 Communication Group, Version 3.0. [online]. 2016. [https://cccr.org/author-](https://cccr.org/author-resources)
13
14 657 [resources](https://cccr.org/author-resources) (accessed 30 Feb 2022).
15
16 658 75. Bruffaerts R, Demyttenaere K, Hwang I, *et al*. Treatment of suicidal people around the world.
17
18 659 *Br J Psychiatry* 2011;199:64–70. <https://doi.org/10.1192/bjp.bp.110.084129>
19
20
21 660 76. Comendador L, Cebrià A, Sanz A, *et al*. Efficacy of synchronous remote-based interventions
22
23 661 for suicide prevention among adolescent and adult patients: A systematic review and meta-
24
25 662 analysis. *Eur Psychiatry* 2022;65:S295–6. <http://dx.doi.org/10.1192/j.eurpsy.2022.754>
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1-2
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	24
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Title page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	390-394
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	408-419
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	408-419
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	416-419
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	39-112
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	124-129
METHODS					

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	131-191 216-219
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	192-203 216
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Supplementary File 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	226-231
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	233-243
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	245-250
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	252-258
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	174-191
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	260-269
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	273-275 285 - 299
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	292-299
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	301-303
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	272-275

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	327-329
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	331-334

For peer review only

Supplementary File 2. PubMed search strategy

Search strategy

("suicide"[MeSH Terms] OR suicid*[Title] OR "suicidal ideation"[MeSH Terms] OR "suicide ideation"[Title] OR "suicide, attempted"[MeSH Terms] OR "attempted suicide"[Title] OR "suicidal behavio*"[Title] OR "non-fatal attempt"[Title] OR "unsuccessful attempt"[Title] OR "suicide, completed"[MeSH Terms] OR "completed suicide"[Title] OR "fatal attempt"[Title] OR "self-injurious behavior"[MeSH Terms] OR self-injur*[Title] OR self-harm*[Title] OR "self-destructive behavio*"[Title] OR self-poisoning[Title] OR "repeated suicide"[Title] OR suicide-risk[Title])

AND ("treatment outcome"[MeSH Terms] OR treatment[Title/Abstract] OR therap*[Title/Abstract] OR intervention*[Title/Abstract] OR "crisis intervention"[MeSH Terms] OR prevention[Title/Abstract] OR "follow-up studies"[MeSH Terms] OR follow-up[Title/Abstract] OR contact*[Title/Abstract] OR management[Title/Abstract] OR program*[Title/Abstract] OR "psychotherapy, brief"[MeSH Terms] OR "brief psychotherap*"[Title/Abstract] OR "brief contact intervention*"[Title/Abstract] OR "post-discharge intervention*"[Title/Abstract] OR effectiv*[Title/Abstract] OR efficacy[Title/Abstract])

AND (synchron*[Title/Abstract] OR "online systems"[MeSH Terms] OR real-time[Title/Abstract] OR "immediate communication*"[Title/Abstract] OR "remote consultation"[MeSH Terms] OR remote*[Title/Abstract] OR non-presential[Title/Abstract] OR non-face-to-face[Title/Abstract] OR non-attend*[Title/Abstract] OR "distance counseling"[MeSH Terms] OR distance[Title/Abstract] OR digital[Title/Abstract] OR "telemedicine"[MeSH Terms] OR telemedicine[Title/Abstract] OR "telecommunications"[MeSH Terms] OR "telecommunication*"[Title/Abstract] OR telehealth[Title/Abstract] OR teleassistance[Title/Abstract] OR telepsychology[Title/Abstract] OR telepsychiatry[Title/Abstract] OR telecare[Title/Abstract] OR telemonitoring[Title/Abstract] OR teleconsult*[Title/Abstract] OR telecounsel*[Title/Abstract] OR "telemental health"[Title/Abstract] OR online[Title/Abstract] OR on-line[Title/Abstract] OR "information and communication technolog*"[Title/Abstract] OR ICT[Title/Abstract] OR e-therap*[Title/Abstract] OR "electronic therap*"[Title/Abstract] OR e-health[Title/Abstract] OR "electronic health"[Title/Abstract] OR m-health[Title/Abstract] OR "mobile health"[Title/Abstract] OR "telephone"[MeSH Terms] OR telephon*[Title/Abstract] OR "cell phone"[MeSH Terms] OR phone*[Title/Abstract] OR "phone call*"[Title/Abstract] OR call*[Title/Abstract] OR "telephone contact*"[Title/Abstract] OR "hotlines"[MeSH Terms] OR hotline*[Title/Abstract] OR "hot line service*"[Title/Abstract] OR "call centers"[MeSH Terms] OR helpline*[Title/Abstract] OR lifeline*[Title/Abstract] OR "suicide prevention lifeline"[Title/Abstract] OR "crisis line*"[Title/Abstract] OR video*[Title/Abstract] OR "videoconferencing"[MeSH Terms] OR video-call*[Title/Abstract] OR "clinical videoconferencing"[Title/Abstract] OR CVT[Title/Abstract] OR chat*[Title/Abstract] OR chatbot[Title/Abstract] OR "text messaging"[MeSH Terms] OR "text messaging"[Title/Abstract] OR "instant messag*"[Title/Abstract] OR SMS[Title/Abstract] OR "mobile applications"[MeSH Terms] OR "mobile application*"[Title/Abstract] OR App[Title/Abstract] OR "phone application*"[Title/Abstract])

AND ("randomized controlled trials as Topic"[Mesh] OR "randomized controlled trial"[Title/Abstract] OR "controlled clinical trials as Topic"[Mesh] OR "controlled clinical trial"[Title/Abstract] OR trial*[Title/Abstract] OR "clinical studies as Topic"[MeSH Terms] OR

1
2
3 "clinical stud*"[Title/Abstract] OR "random allocation"[MeSH Terms] OR
4 random*[Title/Abstract] OR "intervention group*"[Title/Abstract] OR "control
5 group*"[Title/Abstract]
6

7 NOT (systematic review*[Title] OR review*[Title] OR meta*[Title] OR protocol[Title])
8

9 **Filters**

10
11 The following filters were applied: text availability (Full text), language (English, Spanish), age
12 (Adolescent: 13-18 years, Adult: 19+ years).
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only