



The impact of telephone crisis services on suicidal users: A systematic review of the past 45 years

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**The impact of telephone crisis services on suicidal users:
A systematic review of the past 45 years**

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Review

Abstract

Purpose - Telephone crisis services are increasingly subject to a requirement to “prove their worth” as a suicide prevention strategy. This systematic review was conducted to 1) provide a detailed overview of the evidence on the impact of telephone crisis services on suicidal users, 2) determine the limitations of the outcome measures used in this evidence, and 3) suggest directions for future research.

Design/methodology/approach - MEDLINE via Pubmed (from 1966), PsycINFO APA (from 1967) and ProQuest Dissertation and Theses (all to June 4, 2015) were searched. Papers were systematically extracted by title then abstract, according to predefined inclusion and exclusion criteria.

Findings – 18 articles met inclusion criteria representing the following outcome measures: changes during calls, reutilisation of service, compliance with referrals, caller satisfaction and counsellor satisfaction. The majority of studies showed a positive impact on immediate and intermediate levels of suicidal urgency and on depressive mental states, and they elicited positive feedback from users and counsellors.

Research limitations/implications – A major limitation pertains to differences in the use of the term “suicidal”. Other limitations include the lack of long-term follow-up and of controlled research designs. Future research should include a focus on long-term follow-up designs, involving strict data protection. Furthermore, more qualitative research is needed in order to capture the essential nature of the intervention.

Originality/value – This paper attempts to broaden the study and the concept of “effectiveness” as hitherto used ~~about telephone crisis services~~ in the literature about telephone crisis services and offers suggestions for future research.

Keywords *Suicide prevention, telephone crisis interventions, evaluations, suicidality.*

Paper type *Literature review.*

Background

According to World Health Organisation reports, deaths by suicide have increased globally with 800,000 deaths due to suicide annually (WHO, 2014). This number does not include suicide attempts, which can be 20 times more common than the number of completed suicides (Scott and Guo, 2012). Suicide has, therefore, been recognized as a serious global health problem in most Western countries and suicide prevention strategies have received increased attention over the past couple of decades (WHO, 2014).

In the literature, many types of suicide prevention approaches and strategies are described, for example those that focus on medical means to prevent suicide (pharmacological), those proposing restricted access to lethal means (e.g. pesticides and firearms) and those attempting to enhance affective contact (counselling, psychotherapy, text messaging, postcards, etc.) (Goldney, 2005: 131; WHO, 2014).

The present review focuses on those services that go under the popular term of “hotline” or “helpline”. These are services whose main focus is to provide a telephone-based “listening” service that offers emotional and psychological support to individuals in distress, including those in suicidal states, and whose ultimate goal is to help prevent suicide. Such crisis intervention services operate under many names such as: “Befrienders Worldwide” (www.befrienders.org), the “International Federation of Telephonic Emergency Services” (IFOTES) (www.ifotes.org), “Lifeline International” (www.lifeline.org.au) and Samaritans (www.samaritans.org).

Today’s telephone crisis services can be dated back to the last part of the nineteenth century, when telephone crisis services were established for a short period of time in Central Europe and the eastern part of the US before subsequently dying out.

At that time they were established on the assumption that the potential suicidal individual would – when prompted by national and local advertising – either visit or telephone the organization as a “cry for help” (Barraclough et al., 1977: 237). A further assumption behind the establishment of suicide prevention centres and telephone crisis services worldwide was that the acute affective state and suicidal behaviour of callers might be reduced, interrupted or even prevented as a result of immediate access to psychological and emotional first aid provided by the usually non-professional volunteers working at the centre (Dew et al., 1987: 239; Speer, 1971: 83).

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8 Furthermore, providing help in finding alternate coping strategies for the caller as well as action
9 plans for the future including referrals to mental health services constituted one of the centres' main
10 goals (Hoff, 1989; Lee, 1999: 4).
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12 In recent years traditional telephone support has been extended to encompass new
13 technologies such as email, Internet chat forums and text messaging (Luxton et al., 2011: 50;
14 Krysinska and De Leo, 2007: 238). As survey questionnaire studies indicate, an increasing number
15 of users choose these newer communication means as their method of contact (Pollock et al., 2010:
16 60; Lester, 2008: 233). In the light of these competing new technological methods of contacting
17 crisis services, the question of the impact of telephone crisis support becomes re-actualized, as does
18 a discussion of the methodological difficulties and challenges entailed by effect studies within
19 suicide prevention.
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24 Over the past ~~45~~fortyfive years, the effectiveness of suicide prevention centres and their
25 services has been examined by a number of researchers, most of them reaching the conclusion that
26 the suicide preventive effects of telephone crisis services remains uncertain and equivocal (Gould
27 and Kalafat, 2009: 459; Mishara et al. 2007: 309).
28

29 In the literature this lack of evidence has been ascribed to major methodological challenges
30 and ethical considerations pertaining to the area of suicidology (Oquendo et al., 2004; Streiner and
31 Adam, 1987: 93; Mishara and Daigle, 1997: 862; Strohl, 2005: 5; Hornblow, 1986: 732). One major
32 ethical consideration that makes effective evaluation methods difficult to implement (e.g. a rigorous
33 follow-up design using before and after measures) is the common policy of using caller anonymity.
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36 Several studies have attempted to determine the effectiveness of the activities of a suicide
37 prevention centre by comparing the suicide rate in towns in which a suicide prevention centre was
38 present with the suicide rate in towns where a suicide prevention centre was absent. In order to
39 control for variables other than the centre activity, the studies used ecologically similar towns as
40 controls, that is, towns that matched economic, social and demographic characteristics (Dew et al.,
41 1987: 239; Mishara, 2001: 156). Ecological and time-series studies measuring a distal effect of
42 suicide prevention centres have demonstrated inconsistent and conflicting results. For that same
43 reason the studies have been subject to critique by several researchers, who have argued that it is
44 impossible both empirically and theoretically to isolate the effect of a specific suicide prevention
45 centre from other social factors influencing the setting up of a suicide prevention centre and the
46 incidence of suicide (Mishara, 2001: 156; Hornblow, 1986: 23).
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52 Randomized controlled trials are also questionable in this context. Setting up a project in
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8 which only a proportion of research subjects receive crisis services may not only be counter to
9 research ethics but may also involve insensitivity towards the research subjects' existential crisis
10 condition.
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12 However, any such difficulties in evaluating the effectiveness of telephone crisis services do
13 not mitigate the demands of funders, public and private, for evidence of the benefit of telephone
14 crisis services for users.
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16 The purpose of this review is, therefore, 1) to provide an in-depth overview of the evidence
17 on the impact of the telephone interventions provided by telephone crisis services, one that includes
18 all relevant outcome measures and not solely the mortality of the users, and 2) to consider possible
19 limitations of the outcome measures employed in order to provide suggestions for future research.
20 The following research questions are addressed:
21

- 22 1. What is the evidence of the impact of telephone crisis services for suicidal individuals?
 - 23 2. What are the limitations of the outcome measures used in this evidence?
 - 24 3. What are the implications of this systematic review for further research?
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29 **Design**

30 The design and reporting of this systematic review follow recent best practice guidance by
31 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses; formerly
32 QUOROM), adapted according to the aims of the review (Moher et al., 2010).
33

34 The systematic review was conducted in five stages, corresponding to objectives 1-5: (1)
35 identification of articles (database search), (2) articles identified as relevant from title and initial
36 abstract review, (3) exclusion and inclusion criteria applied, (4) full text retrieval, and (5) data
37 analysis.
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42 *Data sources*

43 Three electronic databases were searched (all to June 4, 2015): MEDLINE via Pubmed (from
44 1966), PsycINFO APA (from 1967) and ProQuest Dissertation and Theses (from database
45 commencement). These databases were searched separately and the results combined. Reference
46 lists of identified studies, relevant review articles and books dealing with effect and/or evaluation of
47 telephone crisis services (helplines, hotlines) were searched.
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51 *Search strategy*

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8 A search strategy was developed, tested and refined by the authors in collaboration with two
9 information specialists and was designed to access both published and grey literature (in other
10 words, studies with limited distribution and therefore not included in computerized bibliographic
11 retrieval systems), unpublished reports, dissertations, policy documents, etc. (Pope et al., 2007: 29).
12 Search terms were a combination of controlled vocabulary (MeSH/index terms) and free-text terms.
13 The search strategy for the databases used four groups of terms combined with AND as shown in
14 Table 1. The keywords in each group were the same across databases. The MEDLINE MeSH terms
15 served as a model for controlled vocabulary terms in the other databases, according to their
16 available search capacity. The search algorithm of two databases is presented in Figure 1.
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22 **Table 1: Block search.**

23 **Figure 1: Search Algorithm for PsychInfo and Medline databases.**

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26 *Inclusion/exclusion criteria*

27 The criteria for the inclusion of studies were as follows. They should be original research studies
28 (employing either quantitative, qualitative or mixed-methods approaches) aiming to evaluate
29 telephone services directed towards suicidal users and reported in English, German, French,
30 Norwegian, Swedish or Danish.
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32 It is recognized that the term “suicidal” is a broad and imprecise term including a range of
33 interpretations relating to specific thoughts, feelings, intentions, behaviours etc. that might be
34 coupled to both an acute and a chronic state. We shall return to the consequences of the absence of
35 a universally accepted definition of the term (Silverman et al., 2007). For this review, however,
36 studies have been included regardless of how they explicitly define or implicitly understand the
37 term.
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42 The criteria for the exclusion of studies were as follows. They should not a) describe suicide
43 prevention centre activities without specific evaluation of the services or effect measurement, b)
44 measure the effect of the presence of suicide prevention centres (intervention) on the overall suicide
45 rate in a population (e.g. ecological studies or time-series studies), c) focus on psychological crises
46 (including depression) and psychiatric diagnoses (e.g. first episode psychosis), excluding
47 individuals with suicidal behaviours, suicidal ideation and self-harm; d) explore different helper
48 behaviours and intervention styles without exploring intervention outcome; e) examine specially
49 designed psychotherapy programs or proactive reach-out programs.
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Study selection

A summary of the stages of the review process, according to PRISMA recommendations, is given in Figure 2. The database searches yielded 957 publications (439 from Pubmed Medline, 343 from PsychInfo and 175 from ProQuest Dissertation and Theses). Of those 82 were duplicates. Of the remaining 875 publications, 36 were judged to be relevant on the basis of a screening of title and initial abstract review. On further examination 19 publications were excluded in accordance with the exclusion criteria. Full texts of 17 publications were retrieved. Through hand searching journals, reviews and books, an additional eight publications were retrieved, giving a total of 25 publications for data extraction. After reading the full publications another seven publications were excluded in accordance with the exclusion criteria. All three reviewers (E.A.H., T.P. and S.H.) were engaged in the selection process. If there was disagreement about whether a study should be included or not, this was discussed in detail among the three reviewers and a decision made on whether or not to include it on the basis of examining the full text. No formal quality appraisal instrument was used to assess the studies, since the methodologies employed were judged to be too variable.

Figure 2. Flow diagram for data abstraction.

Data extraction

After a detailed assessment of the studies included, the authors judged the studies heterogeneous in important aspects. These included their populations (different ages and settings), study designs (controlled and non-controlled), outcome variables (immediate, intermediate, mediate) and analytical strategies (content analysis and statistical analyses). The authors therefore agreed on selecting a narrative synthesis approach as an appropriate method to systematically and critically review the evidence (Popay et al., 2006).

Textual descriptive paragraphs for all the studies included were produced in a systematic way, where possible including the same information for all studies and in the same order. The following information was extracted: type of study (including methodology, methods, study population and setting), outcome variables, measures and study findings (Pope et al., 2007: 41). A tabulation of the synthesis process is presented in Table 2 and illustrates the preliminary synthesis before developing the textual descriptions of the studies. Reading the textual study descriptions several times, patterns across studies emerged that were informed by the review

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8 questions. Finally, studies were categorized according to the outcome measure used and presented
9 in the narrative synthesis.
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12 **Table 2: Study characteristics of studies included.**
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15 **Findings**

16 *Changes during calls*

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18 Eight out of eighteen studies explored changes in mental and affective states of users during calls.
19 Using rater assessment of calls, authors from Canada (Mishara and Daigle, 1997; Mishara et al.,
20 2007), Australia (King et al., 2003), the US (Gould et al., 2015; Gould et al., 2007; Becker, 1997;
21 Strohl, 2005) and Taiwan (Chiang, 2011) reported changes in the immediate degree of suicidality
22 from the beginning to the end of calls.
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25 The studies from Canada (Mishara and Daigle, 1997; Mishara et al., 2007) used
26 independent outside raters who listened to calls received by volunteers at suicide prevention centres
27 observing counsellor behaviours, including observations of the specific intervention style employed
28 (non-directive Rogerian or directive), caller characteristics (e.g. depressive mood, suicidal urgency)
29 and changes during the calls (Mishara and Daigle, 1997: 867; Mishara et al., 2007: 311). The
30 Mishara and Daigle study ([1997: 874](#)) demonstrated rater evaluations of decreased depressive mood
31 from the beginning to the end in 14% of calls, decreased suicidal urgency ratings from the
32 beginning to the end in 27% of calls, and reaching a contract to not attempt suicide in 68% of calls,
33 of which 54% of contracts were upheld according to follow-up data ([Mishara and Daigle, 1997:
34 874](#)). In the 2007 [study](#) (Mishara et al., [2007: 314](#)), ~~study~~ 52% of the callers were rated as less
35 confused and more decided by the end of the call, 48% were rated more resourceful and less
36 helpless, 40% were rated more hopeful, and 38% were rated more confident. However, 11% of
37 callers were rated more apprehensive at the end of the call, 9% sadder, 9.5% more helpless, 11%
38 more hopeless, and 10% more confused. Furthermore, Mishara et al. ([2007: 317](#)) found that positive
39 call outcomes were more likely to occur when the counsellor used the non-directive Rogerian
40 intervention style ([Mishara et al., 2007: 317](#)).
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43 In King et al.'s [study](#) (King et al., 2003: [408](#)) [study](#), 100 taped calls to Kids Help Line
44 in Australia were evaluated by independent raters, and significant decreases in suicidality and
45 significant improvement in mental state were found to occur during the course of counselling
46 sessions ([King et al., 2003: 408](#)).
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8 Gould et al.'s (2007) study assessed 1,085 callers and found a significant reduction in
9 suicide status from the beginning of the call (Time 1) to the end of the call (Time 2) with regard to
10 intent to die, hopelessness and psychological pain. Additionally, there were significant reductions in
11 callers' psychological pain and hopelessness from the end of the call (Time 2) to follow-up (Time
12 3) among the 380 callers who completed a follow-up assessment. However, there was no significant
13 reduction in callers' intent to die during this period (Gould et al., 2007: 345).
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16 Three dissertation research studies also supported the above findings that the telephone
17 crisis service had an immediate positive impact on callers' mental distress and suicidality (Becker,
18 1997; Strohl, 2005; Chiang, 2011).
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21 Becker's (Becker, 1997) dissertation research examined changes in the level of suicidality of
22 129 callers to a Los Angeles Suicide Prevention Center reporting suicidal ideation. The findings
23 suggest that the interventions significantly reduced the suicidality of callers immediately and
24 effected a continued reduction over time. Becker (p.95) concluded that "the effect of the telephone
25 interventions appears to be lifesaving".
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28 A study by Strohl (2005) demonstrated significant reductions of callers' suicidality at the
29 end of calls and at a 2-3 week follow up assessment, as measured by intent to die, psychological
30 pain and hopelessness. Further exploratory analyses suggested associations between the callers'
31 suicide characteristics, demographics, and outcome measures (Strohl, 2005). Chiang (2011)
32 investigated the Taiwan National Suicide Hotline and was able to demonstrate that the hotline
33 effectively decreased all 300 callers' mental disturbance and reduced their suicide risk during the
34 call.
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38 Gould et al. (2015) aimed to examine whether a specific training strategy (the ASIST model:
39 Applied Suicide Intervention Skills Training) added value over and above Lifeline centres'
40 individual training. They were the first to conduct a randomized controlled trial of a telephone crisis
41 intervention and training strategy in the US. They monitored 1,507 calls from 1,410 suicidal
42 individuals to 17 Lifeline network centres to assess whether standardized training following the
43 ASIST model yielded significant changes in counsellors' behaviours and callers' outcomes. Based
44 on silent monitoring by observers blind to counsellors' ASIST training status, callers who spoke
45 with ASIST trained counsellors appeared less depressed, suicidal and overwhelmed, and there was
46 greater improvement in callers' feelings of hopefulness than among callers who spoke with a
47 counsellor in the control condition where counsellors had not received ASIST training. Gould et
48 al's (2015: 688) findings highlight the importance of focusing on training for suicide crisis
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8 telephone services in the future (Gould et al., 2015: 688).

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11 *Reutilisation rate*

12 Another way to assess the telephone crisis services is to determine how many callers reuse the
13 service. For some authors the rate of re-use is an indication of the extent to which the caller
14 appreciates the telephone service or finds it helpful (Strohl, 2005: 15; Apsler and Hoople, 1976:
15 295). Four of the studies reviewed report rates of reuse that range from 23% (Wold, 1973) to 42%
16 (Speer, 1971). Speer (1971), noting that a high frequency of re-contacts runs counter to the idea of
17 crisis centres helping individuals who are experiencing acute crises. They reported that the largest
18 percentage of repeat callers to the telephone service under investigation called back only once
19 during a two-month period (66%). At the other end of the spectrum, 17 individuals called 20 times
20 or more, representing 4% of the repeat callers (Speer, 1971: 84). Speer (1971: 85) concluded that
21 the service satisfactorily served the large number of people who called back only one time and
22 fulfilled its function as an acute crisis service (Speer, 1971: 85).

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24 In Wold's longitudinal study (Wold, 1973: 183) 184 callers to a suicide prevention centre
25 were interviewed at a two-year follow-up. Of these, 23% had recontacted the centre during the two-
26 year interim period (Wold, 1973: 183). In the study by Gould et al. (2007: 348) mentioned above
27 (Gould et al., 2007), 107 (28.2%) callers of the 380 suicide callers who participated in the follow-up
28 had another contact with the crisis centre after their initial call. Of these callers, 59 (55.1%) callers
29 had one additional contact, 19 (17.8%) callers had two contacts, 9 (8.4%) callers had three contacts,
30 4 (3.7%) callers had four contacts, 10 (9.3%) callers had between 5 and 30 contacts, and 6 (5.6%)
31 callers did not remember the number of recontacts (Gould et al., 2007: 348). The finding that
32 around 30% of suicidal callers had another contact with the centre after their initial call is consistent
33 with the reported rate of reuse in Apsler and Hoople's (1976) study (Apsler and Hoople, 1976).

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35 Evidence shows, then, that the largest percentage of repeat callers to telephone crisis
36 services call back only once or twice (Speer, 1971; Gould et al., 2007), and that the rate of reuse is
37 significantly related to background variables such as caller's situation, age and race (Apsler and
38 Hoople, 1976).

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49 *Caller compliance with counsellor referrals*

50 One of telephone crisis services' primary goals is to enhance access to ongoing help by providing
51 referrals to formal mental health care (Gould et al., 2012: 22). In three out of 18 studies caller
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8 compliance with counsellor referrals had been used as an outcome measure in the evaluation of
9 telephone crisis services.

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11 The evidence suggests that telephone counsellors may only be moderately successful
12 in making callers follow through with referrals to mental health services. Gould et al. ([Gould et al.,](#)
13 2007) assessed how many of those 151 suicide callers who were given a new mental health referral
14 had kept or made an appointment with a mental health service in the period between the initial call
15 to the centres and the follow-up assessment. The results demonstrated that only 35% of callers who
16 had been referred to a mental health resource followed through with these referrals in the period
17 between the initial call to the centre and the follow-up assessment (Gould et al., 2007: 348). A later
18 study (Gould et al., 2012) aiming to assess rates of mental health care utilization following Lifeline
19 calls among suicidal callers (n=376) and crisis (non-suicidal) callers (n=278) found that 51.9 % of
20 suicidal callers who had received a mental health care referral utilized mental health services after
21 their hotline call. Of those, however, 31.1 % reported that they had accessed a mental health
22 resource other than that recommended during the call (Gould et al., 2012: 27). Thus the rate of
23 follow-through with the specific mental health referral provided by the crisis counsellor was nearly
24 identical in the two studies by Gould (2007, 2012), but no assessment had been made in the 2007
25 study as to whether non-compliant callers found comparable help elsewhere. As Gould et al. note
26 ([2012: 32](#)), the knowledge that a large percentage of callers find alternatives to the referrals
27 recommended by the counsellors makes it difficult to estimate the actual positive effect of the
28 telephone intervention on caller compliance ([Gould et al., 2012: 32](#)). Tapp et al. ([Tapp et al., 1974](#))
29 had found that caller compliance to referral to face-to-face counselling seemed to be dependent on
30 variables such as problem identification during the call, the callers' motivation (referral
31 responsiveness), and the specificity of counsellors' advice. These correlations had already been
32 demonstrated in an earlier study by Slaikeu et al. ([Slaikeu et al., 1973](#)). However, in the study by
33 Tapp et al. ([1974: 362](#)) investigating the same data material, the results were extended by the
34 discovery of a negative correlation between compliance and problem identification during the call.
35 This suggested that, if a problem was identified, callers did not tend to attend appointments.

36 37 38 39 40 41 42 43 44 45 46 47 48 *Caller evaluation*

49 In seven out of 18 studies, researchers sought to evaluate the impact of telephone crisis services by
50 soliciting feedback from callers about their level of satisfaction. Caller satisfaction studies have
51 invariably had positive results. Motto's study ([1971: 20](#)) showed that out of a sample of 575 at-risk
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8 individuals admitted to an in-patient service with symptoms of depression or suicidality, 11% had
9 utilized the nearby telephone crisis service. Of these, 59% reported that they had received
10 substantial help (Motto, 1971: 20), 26% indicated that they would be inclined to call the service if
11 in difficulties. In a study by Slem and Cotler (Slem and Cotler, 1973: 226) 68% of 1,763 high
12 school students rated the nearby telephone hotline service as helpful, whereas 32% provided a
13 negative assessment of the service (Slem and Cotler, 1973: 226). In the study by Gould et al.
14 (Gould et al., 2007: 347), a total of 668 positive responses and 83 negative responses were received
15 to two open-ended questions about what was or was not helpful about the call (Gould et al., 2007:
16 347).

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20 A mixed-methods study by Lee (Lee, 1999) made a further contribution by providing
21 qualitative data to the group of studies evaluating caller satisfaction. Callers evaluated the
22 interventions provided by a suicide prevention centre (Crisis and Information Centre) through a
23 satisfaction survey (Client Satisfaction Questionnaire-3) and semi-structured interviews. Fifty
24 suicidal men and women (15 men and 35 women) ranging from 18-49 years of age participated in
25 the study recording their current suicidal thoughts and/or actions (Lee, 1999: 44). Data collection
26 took place via telephone contact. Participants were classified as low (n=31), medium (n=11) or high
27 (n=8) risk for suicide. Comparisons were made between participants' level of suicide risk and their
28 CSQ-3 scores. No significant differences were detected between satisfaction and callers' level of
29 suicide risk. All of the groups demonstrated high levels of satisfaction, the high-risk group being
30 rated as most satisfied. Furthermore, CSQ-3 scores indicated that gender did not affect satisfaction
31 levels.

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38 The Samaritans have also employed user assessments as an important measure of
39 service outcome, building on the rationale that, if the client's perspective is not taken into account,
40 the evaluation of services is likely to be biased toward the provider's or the evaluator's perspective.
41 In order to gather feedback from Samaritan users of telephone and email services, a survey was
42 posted on Samaritans' website between September 2006 and August 2007 (Ferns and Stace, 2007).
43 54.8% of respondents stated they had contacted Samaritans when they had been feeling suicidal,
44 while 48.1% respondents stated they had contacted Samaritans when they were thinking of harming
45 themselves. 73.5% of suicidal callers felt that contact with Samaritans had helped them take a
46 decision not to end their own life.

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50 This 2006/2007 survey was followed by another online survey, which was part of a
51 larger, independent 2-year evaluation (2008-2010) of the Samaritan services using a mixed-methods
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8 methodology (Pollock et al., 2010; Coveney et al., 2012: 315; Stace and Wyllie, 2011). Data
9 collection methods comprised observation of activity at branches of the Samaritans, individual
10 interviews with callers and volunteers, an online survey of callers' experience of using the service,
11 and a textual analysis of email messages and responses accessed with caller permission. The online
12 survey of callers' views was conducted between May 2008 and May 2009, and 1,309 responses
13 were received (Pollock et al., 2010: 24; Coveney et al., 2012: 315). Respondents reported high
14 levels of satisfaction with the service and perceived contact to be helpful. The median score for
15 helpfulness of last contact was 7 and for overall perception of helpfulness it was 8 (using a 10-point
16 semantic differential scale (1 = *no help at all* to 10 = *very helpful*)). Approximately 75% of
17 respondents rated their overall perception of Samaritans services as "excellent" (31.8%, $n = 268$) or
18 "good" (39.4%, $n = 332$). A further 14.6% ($n = 123$) rated the service as "reasonable", 4.8% ($n =$
19 40) as "bad", and 9.3% ($n = 79$) said it was "variable". However, only a minority (82; 12.2%)
20 indicated that contact with Samaritans had had a longer-term impact.
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The qualitative findings from interviews with 48 callers provided an additional insight into themes such as the help-seeking attitudes of the callers, reasons for calling, and callers' expectations of the service. The findings indicated that although some callers disclosed suicidal thoughts and/or actions when calling the Samaritans, the majority of the interviewees reported chronic mental health problems and used the service repeatedly as a mental health charity – a use that, from the point of view of the organization, went beyond its function (Pollock et al., 2010: 245). These repeat callers tended to be highly appreciative and supportive of the service (Pollock et al., 2010).

Counsellor evaluation

Evidence from two studies shows counsellors evaluating their own effectiveness in aiding the caller positively. In the above reported study by Apsler and Hoople (1976), a second evaluation technique was employed in order to assess the effect of a crisis intervention centre, namely the counsellor's estimation of their effectiveness in aiding the caller, conducted at the conclusion of the call. This approach rested on the assumption that counsellors' effectiveness ratings of the call provide some indication of the efficacy of the hotline intervention (Apsler and Hoople, 1976: 295). Out of 11,703 calls 46% of calls were rated as highly effective while the other 54 % were rated as of moderate or low effectiveness on the rating scale (Apsler and Hoople, 1976: 300). The 46% were related to some of the background variables from the intake form, e.g. age (felt more effective with younger

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8 age groups), economic situation (felt less effective with callers supported by parents or public
9 assistance and with housewives), gender (felt more effective with males), type of problem (felt less
10 effective with drug abuse, crisis and general counselling problems), level of affect (felt less
11 effective with depressed and excited callers) and type of counsellor action (felt more effective when
12 referrals had been made, information given or emergency van sent) (Apsler and Hoople, 1976: 300-
13 301).

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16 One qualitative study by Gilat and Rosenau (2011: 327) examined volunteers'
17 perceptions of the effectiveness of interactions with callers to a helpline. The study was based on an
18 open-ended questionnaire consisting of two items that focused on descriptions of effective calls and
19 explanations of the successful outcome (Gilat and Rosenau, 2011: 327).

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22 Twelve volunteers from the Israeli Association for Emotional First Aid (ERAN), a
23 volunteer-based community mental health service, which offers help by means of telephone
24 helplines and the Internet, were asked to reconstruct from memory the calls they perceived as most
25 effective. The analysis of the written texts showed that most of the calls perceived by the volunteers
26 as particularly helpful were crisis calls as opposed to calls from the chronically ill. Given this type
27 of crisis call, the volunteers were providing short-term help in stressful situations rather than
28 ongoing emotional support. Furthermore, the findings showed that the major criterion for a
29 successful conversation consisted of changes in the caller's mental state between the beginning and
30 the end of the call. The portrait of an effective helpline crisis intervention that emerged from the
31 findings has therefore been described as follows: The volunteer succeeds in establishing an
32 equitable rapport with the caller, focuses the conversation on a single problem, manages the
33 conversation, adapting the pace and duration to the caller's needs, creates a supportive environment
34 that affords the caller emotional security, and utilises a range of strategies in order to produce an
35 emotional, cognitive or behavioural change in the troubled caller's state (Gilat and Rosenau, 2011:
36 336).

37 38 39 40 41 42 43 44 **Limitations of outcome measures**

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46 A number of methodological limitations pertaining to the choice of outcome measures weaken the
47 validity of some of the conclusions drawn in the above studies. Relating process measures to
48 assessments of outcome is consistent with the crisis intervention approach that aims to lead to an
49 immediate change in a temporary or acute state of psychological disequilibrium. The results of the
50 studies measuring changes during calls have demonstrated that telephone crisis intervention as
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8 provided by suicide prevention centres can change the immediate degree of suicidality from the
9 beginning to the end of calls (King et al., 2003; Gould et al., 2007; Mishara and Daigle, 1997;
10 Mishara et al., 2007; Strohl, 2005) and reduce the intermediate level of suicidality at a 2-3 week
11 follow up assessment (Strohl, 2005).
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14 However, with respect to longer-term outcomes (longer than 3-week follow up
15 assessments), the use of this outcome measure is naturally limited. Furthermore, the outcome of
16 immediate change may not be applicable to interactions with chronic or repeat callers who suffer
17 from continuing distress. Although it should be recognized that repeat callers may be “chronically
18 suicidal” in the sense that they have frequent and persistent suicidal thoughts and feelings, the
19 literature points to the fact that a subgroup of repeat callers with chronic mental health problems
20 who use helplines only give the impression of suicidality because they know that this is a
21 precondition for using these services (Pollock et al., 2010, 2012). This means that the results of the
22 studies measuring changes during calls must be interpreted with caution (Hall and Schlosar, 1995).
23 Another important limitation in studies measuring changes during calls is their uncontrolled design
24 making it difficult to definitively attribute the reduction in suicidality to the crisis intervention.
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27 Using the reutilisation rate of callers as success measure has been criticised by some
28 researchers who argue that the level of repeat contact with the suicide prevention service is difficult
29 to interpret (Gould et al., 2007: 349; Speer, 1971: 85). It may indicate that the caller found the
30 initial contact helpful and wishes to continue with the service. It may also indicate that the caller
31 was not satisfied with the help provided in the initial call and called back to give it a second try,
32 possibly even hoping to be allotted another counsellor. Lastly, continued contact with a crisis centre
33 by more and less chronic or repeat callers is an indication that the service is not fulfilling its
34 function as a crisis service, if its purpose is to deal directly with the problem and/or make referrals
35 to mental health services (Hall and Schlosar, 1995: 67). Thus re-contacts might indicate a lack of
36 success in referring callers to mental health professionals.
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39 As we have seen above, there is evidence suggesting that telephone counsellors may only be
40 moderately successful in their attempts to have callers follow through with referrals to mental
41 health services. Around 30% of callers report compliance to referrals provided by telephone
42 counsellors (Gould et al., 2007; Gould et al., 2012). Of these, one-third report that, having received
43 a referral, they sought help from comparable mental health services elsewhere (Gould et al., 2012).
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46 Although caller compliance with counsellor referrals can be viewed as a starting point for an
47 evaluation of telephone counselling services, the findings seem to suggest that the value of such an
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8 effectiveness index is compromised by the fact that caller compliance has shown to be dependent on
9 other variables (e.g. counselling ability and motivation of caller) (Stein and Lambert, 1984: 113).
10 Furthermore, it could be argued that not only the compliance rate but also the appropriateness of
11 referrals ought to be factored into such an evaluation.
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14 Caller satisfaction as an outcome measure has invariably led to positive results (Mishara,
15 2001: 158). Approximately two-thirds of callers who are followed up indicate they are satisfied or
16 very satisfied with the support provided (Motto, 1971). As we have seen, there is evidence that
17 counsellors can respond emphatically to callers, that most callers are satisfied with the help they
18 receive and that telephone counselling services can therefore be said to perform a supportive role in
19 times of individual crisis (Motto, 1971; Slem and Cotler, 1973; Gould et al., 2007; Lee, 1999; Ferns
20 and Stace; Pollock et al., 2010). However, satisfaction with the call does not necessarily indicate
21 improvement of the caller's suicidal situation or mental state.
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25 In addition, because of the confidential nature of calls, response rates in the satisfaction
26 studies are generally poor (ranging from 40-80%), leaving open the possibility [that proportionally](#)
27 [more responses were submitted by](#) ~~of a bias towards successfully contacting more~~ satisfied clients
28 in follow-up. Furthermore, anecdotal reports and qualitative data indicating high levels of caller
29 satisfaction with services as well as high numbers of people using services are not sufficient to
30 prove their impact on suicidal behaviour. In fact, the reviewed qualitative data indicates that a large
31 majority of the service users are people with chronic mental health problems who have no urgent
32 desire to die even though they might describe themselves as "suicidal" (Pollock et al., 2010: 245).
33 This is an important finding since it highlights the limited validity of studies relying on self-
34 reported suicidality. In other words, it is difficult to establish the association between percentages of
35 satisfaction or dissatisfaction and reduction in suicidal behaviour, especially when control groups
36 are not available (Gould et al., 2007). ~~For all these reasons, a number of methodological issues~~
37 ~~place must qualify the validity of any conclusions drawn from satisfaction studies.~~
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44 Counsellors' evaluations have not been regarded [as](#) a valid effectiveness index either. Their
45 non-specific and subjective nature – and the inclination among counsellors to make high rather than
46 middle or low self-ratings (Stein and Lambert, 1984: 104) – leave them open to doubt. However, as
47 noted by Stein & Lambert, the technique of counsellor self-rating might be useful when self-rated
48 ineffectiveness is used for the purpose of training and assessment of volunteers (Stein and Lambert,
49 1984: 104).
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Summary of analysis and implications for future research

This systematic review has highlighted a number of methodological shortcomings in existing research studies, and these will be important to take into account in future research into suicide prevention using telephone crisis services.

The analysis has shown that the extant literature is based on methodologically sub-optimal designs and outcome measures. This is fully understandable given ethical, organisational and other constraints, but it makes it difficult to evaluate the strength of the evidence for a positive effect of telephone crisis services on suicidal users. Interpreted charitably, i.e. with the assumption that the methodological limitations issues identified only affect the validity and results of studies to a limited degree, there is some evidence that there are positive short-term effects. Interpreted more strictly, i.e. with the assumption that the methodological issues have major implications for the validity and results of the studies, the only thing that can be said with reasonable certainty is that there is no evidence of a harmful effect of telephone crisis services.

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However, given the prevalence of telephone crisis lines, and the economic and human resources used to establish them and keep them going (e.g. the many thousands of hours of volunteer time), it is vital that better evidence about their effectiveness is produced. This means that future studies must ask the right questions, use better designs, and have appropriate short-term and long-term outcomes measures. In the following we will briefly outline some of the considerations that should go into designing future studies of the effectiveness of telephone crisis services/helplines.

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The first methodological consideration that raises questions for all outcome measures included here is the difficulty in employing and operationalizing the term “suicidal” in evaluation studies of the impact of telephone services on suicidal users. As pointed out above, qualitative findings have indicated that a common understanding of the term does not exist among users and volunteers (Pollock et al., 2010, 2012). The answer to the question whether telephone service interventions have a positive impact on their suicidal users seems, therefore, to hinge on what is meant by the term suicidal. The lack of a universally accepted definition of the term “suicidal” is a problem that has been discussed among researchers in the field of suicidology since the mid-1990s (Silverman et al., 2007). It continues to present a significant issue for future empirical research in this area wherefore t-T there is a need to explore the nature and the boundaries of reported suicidality.

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8 For that purpose there seems to be a need for more studies using a qualitative methodology
9 and focusing on understanding the research participants' complex lifeworld, including their
10 understanding of key concepts and motives for using these concepts. This would allow additional
11 light to be cast on quantitative findings of the correlations between telephone crisis interventions
12 and the users' suicidality and mental health state. Qualitative research exploring the callers' lived
13 experiences of the telephone intervention may guide both researchers and counsellors in
14 operationalizing outcomes related to the goals of the intervention.
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18 More in-depth understanding of the nature and impact of the helping interaction, of
19 motivations to seek help, of attitudes and of what actually takes place interpersonally during calls
20 could be derived from qualitative studies with an existential-phenomenological focus on
21 phenomena such as "being-there", listening, relatedness and intersubjectivity. Although most
22 interventions aim to help alleviate existential distress and suffering, studies have neglected to
23 examine how commonly examined outcomes such as depression, psychological distress and
24 suicidal urgency relate to such specific existential phenomena that are only indirectly related to the
25 goals of the intervention.
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29 Having underlined the need for more qualitative research in the investigation of the impact
30 of telephone crisis services, it is also the case that there is a need for improved quantitative
31 methodologies. The methodologically ideal quantitative design will incorporate randomisation of a
32 group of users large enough to get reasonable statistical power at a realistic change of suicide rate.
33 It is recognized, however, that in many cases such a study can be ruled out on grounds of ethics,
34 since it can be unethical to randomise people at risk of suicide to a non-intervention arm. However,
35 researchers may need to consider long-term follow-up assessments of telephone crisis interventions
36 at regular intervals if the question of effectiveness is to be answered satisfactorily. Understanding
37 the progression of an intervention could provide important information about the optimal number of
38 interventions (calls) required to achieve benefit and the duration of that benefit. Given the large
39 number of repeat callers to telephone crisis services, research is needed that investigates both the
40 number of repeat contacts and users' reasons for repeat calling.
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46 It is recognized that recruiting participants for such follow-up studies can be a challenging
47 endeavour given the nature of their problems. However, some follow-up studies have been
48 conducted successfully, using procedures that have dealt with issues of anonymity and
49 confidentiality (e.g., Gould et al., 2007, 2012).
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The insistence on anonymity is based partly on considerations relating to absolute confidentiality, partly on the idea that it promotes a trusting counselling process. If callers are to be asked to accept follow-up and consequently have to surrender anonymity, then it is essential that this be done in a way that upholds confidentiality and trust in the counselling process. This will involve two separate sets of input to the design of the specific follow-up study: 1) academic input in relation to data protection, and 2) user input as to the most appropriate way of addressing the question of participation in a follow-up study.

In such studies it will also be necessary to account for the effectiveness of counsellors, including their background and training, as these may impact the delivery and efficacy of the intervention.

Conclusions

In this systematic review we have attempted to provide a detailed overview of the evidence on the impact of telephone crisis services on suicidal users, ~~not focusing solely on a narrow understanding of effectiveness as measured by a reduction in the mortality rate of service users.~~

Ethical restrictions in the field of suicide prevention research have meant that the outcome measures used have generally been those that minimise the risk of breaching the standard research ethics guidelines. These outcome measures are: caller changes during calls, reutilisation of service, compliance with referrals, caller satisfaction and counsellor satisfaction.

Several of the 18 included studies showed a positive impact on immediate and intermediate levels of suicidal urgency and on depressive mental states, and they elicited positive feedback from users (mainly callers with chronic mental health problems) and counsellors.

However, due to methodological limitations and shortcomings, it still remains unclear whether telephone services fulfil their goal of providing effective crisis intervention that reduces suicidality in their callers. What can be concluded from several of the studies reviewed above is that telephone service interventions have other important and valuable effects such as reducing psychological distress in callers with chronic mental health problems who have no responsive informal networks (family members and friends).

To reduce the level of uncertainty and ambiguity in studies evaluating the impact of telephone crisis services on suicidality, future research should include improved quantitative methodologies using suitable control groups and long-term follow-up, involving strict data protection. Furthermore, more qualitative research is needed in order to capture the essential nature

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of the telephone crisis intervention as well as to ~~Although findings in studies using caller changes during calls as an outcome measure have shown beneficial impact on immediate and intermediate levels of suicidal urgency and depressive mental states, it remains unclear whether telephone services prevent their users from committing suicide in the longer term. Another limitation to be considered is the difficulty in assessing the characteristics of "suicidality", from the perspective both of users and of volunteers/raters (Pollock et al., 2012; Freedenthal, 2008). Qualitative evidence suggests that many users consider that there is a natural link between having mental health problems and being suicidal (Pollock et al. 2010) and that some work up suicidal identities as a strategic way to appeal for support and help (Pollock et al., 2012; Horne and Wiggins, 2008). In doing so, they risk creating a significant blurring of the associations, interpretations and conclusions made by researchers on the positive impact of telephone services on suicidality.~~

~~What can be concluded from several of the studies reviewed above is that telephone service interventions have other important and valuable effects such as reducing psychological distress in callers with chronic mental health problems who have no responsive informal networks (family members and friends). Although these findings are very valuable, they do not shed light on whether helplines fulfil their goal of providing effective crisis intervention that reduces suicidal actions in their callers.~~

~~To reduce the level of uncertainty and ambiguity in studies evaluating the impact of telephone crisis lines on suicidality, more in-depth knowledge needs to be acquired using qualitative methodologies. These will elucidate subjective understandings and usages of the term various phenomena related to "suicidality" including associated perceptions of, such as suicide ideation, suicide intent, suicide attempt and, suicide behaviour and suicide communication.~~

~~Furthermore, improved quantitative methodologies using suitable control groups and long-term follow up are needed to establish whether there is any evidence for the positive impact of telephone service interventions on suicide frequency.~~

Strengths and limitations

Some discussion of the limitations of this study is warranted. While the literature search was systematic, formal methods to synthesise the results were not employed. The reason for this was that the literature covered a large time span and in various salient aspects was heterogeneous, as already mentioned above. This meant that the context of the studies, including the questions being

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8 asked, varied. This is likely to have influenced the shaping of the ~~study~~ conclusions but not
9 necessarily in ways that could be made fully transparent in the narrative synthesis. Future
10 systematic reviews that focus on one type of outcome measure and that select designs from a
11 narrower range can avoid some of these differences in knowledge contexts and so limit the
12 interpretative flexibility of the study results, but this will be at the cost of having a much more
13 limited sample of studies to review.
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16 17 18 **Competing interests**

19 The authors declare that they have no competing interests.
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22 **Authors' contributions**

23 The first author participated in the design of the study, developed the search strategy, extracted the
24 data and drafted the manuscript. The ~~third last~~ author conceived of the study together with the
25 second author, participated in the design, contributed to the search strategy and helped to draft the
26 manuscript. All authors read and approved the final manuscript.
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For Peer Review

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Table 1: Block search

Block 1	Block 2	Block 3	Block 4
suicide	Prevention Intervention reduction	Telephone Hotline Helpline Telephone emotional support service Calls Counselling	Effect Evaluation Evidence Outcome Post program Follow-up program Follow-up programme

For Peer Review

Figure 1: Search Algorithm for PsychInfo and Medline**PsychInfo (APA platform)**

1. {Suicide}/explode (index term): 21252
2. {prevention}/explode (index term) OR prevention* (all fields): 298431
3. {intervention}/explode (index term) OR intervention* (all fields): 193482
4. Reduc* (all fields): 303917
5. (2 – 4)/OR: 682268
6. Hotline* (all fields) OR helpline* (all fields): 918
7. Telephone* (all fields): 21473
8. Telephone emotional support service* (all fields): 151
9. Call* (all fields): 122561
10. Counselling (all fields) OR counseling (all fields): 188158
11. (6 – 10)/OR: 322030
12. Effect* (all fields): 1083231
13. {Evaluation}/explode (index term): 16460
14. Evidence (all fields): 329572
15. Outcome* (all fields): 302530
16. Post program* (all fields): 24755
17. Follow-up program* (all fields) OR followup program* (all fields): 28236
18. (12 – 17)/OR: 1464554
- 19. 1 AND 5 AND 11 AND 18: 343**

Medline (via PubMed)

1. Suicide [MeSH]: 49245
2. Suicid* [all fields]: 71742

1 3. 1 OR 2: 71742
2
3

4 4. Preventi* [all fields]: 1514255
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7 5. Intervention* [all fields]: 662319
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10 6. Reduc* [all fields]: 2505423
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13 7. 4 – 6/OR: 4117010
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16 8. Telephone [all fields]: 52327
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19 9. Helpline [all fields]: 414
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22 10. Hotline [MeSH] OR Hotline [all fields]: 2913
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25 11. Telephone emotional support service [all fields]: 178
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28 12. Calls [all fields]: 27568
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31 13. Counselling [all fields] OR counseling [all fields]: 93907
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34 14. 8-13/OR: 168147
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36

37 15. Effect* [all fields]: 7259016
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40 16. Evaluation [MeSH] OR evaluation [all fields]: 1971888
41
42

43 17. Evidence [all fields]: 1259941
44
45

46 18. Outcome* [all fields]: 1583823.
47
48

49 19. Post program* [all fields]: 406
50
51

52 20. Follow-up program* (all fields) OR followup program* (all fields): 1758
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55 21. 15-20/OR: 9766156
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58 **22. 3 AND 7 AND 14 AND 21: 439**
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Fig. 2. Flow diagram for data abstraction.

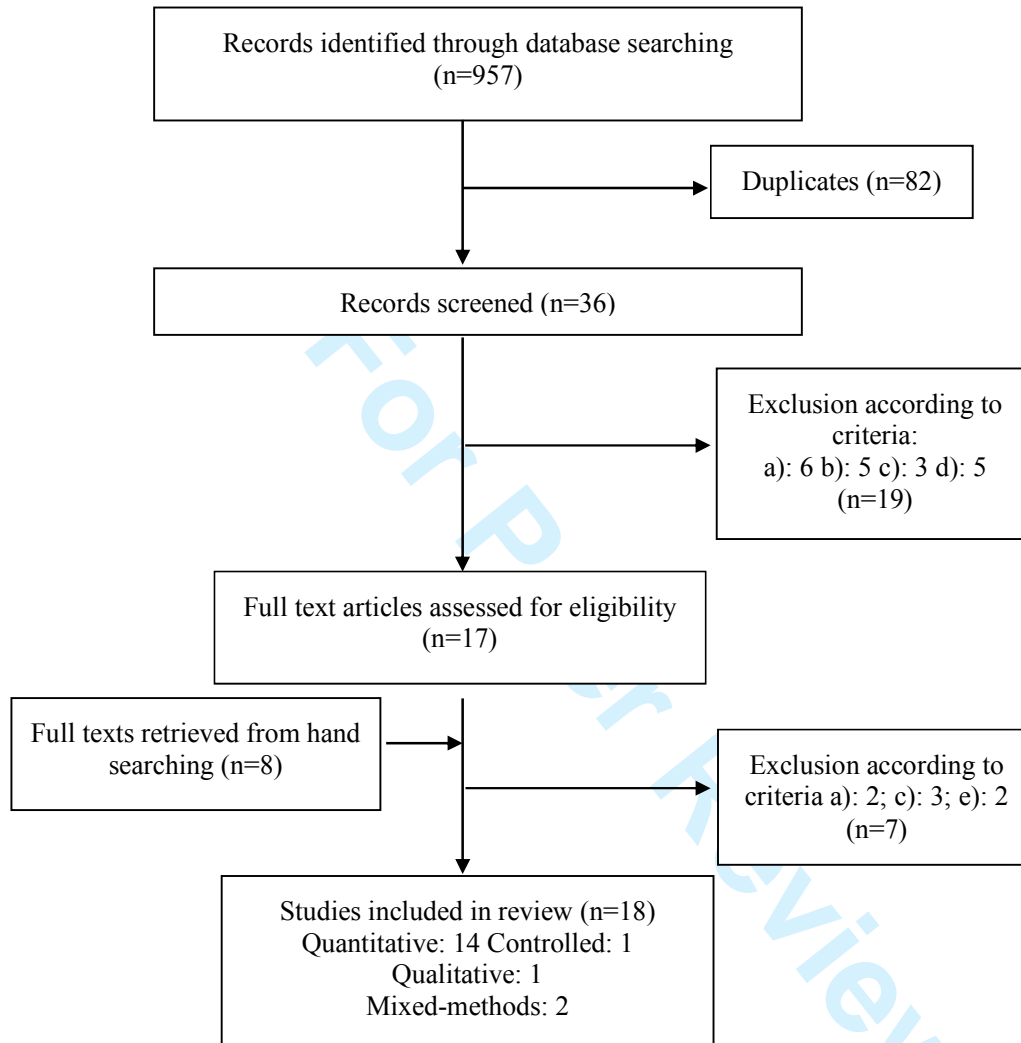


Table 2: Study characteristics of included studies.

Author(s) and setting	Type of study	Participants	Outcome measure (CHANGES DURING CALLS)	Measures	Study findings
Mishara & Daigle (1997). Two Canadian suicide prevention centres.	Uncontrolled evaluation study	Volunteers: n=110 Clients: n=263 suicidal callers (chronic and acute callers). Calls: n=617.	Proximal outcomes: Changes in the suicidal urgency from the beginning to the end of the call, changes in depression, and follow-up information on upholding a contract and not attempting suicide.	5-point Brasington Depression Scale. 9-point Suicide Urgency Scale.	Observer evaluations showed decreased depressive mood from the beginning to the end in 14% of calls, decreased suicidal urgency ratings from the beginning to the end in 27% of calls, and reaching a contract in 68% of calls, of which 54% of contracts were upheld according to follow-up data. Within the context of relatively directive interventions, a greater proportion of "Rogerian" nondirective responses was related to significantly more decreases in depression. Reduction in urgency and reaching a contract were related to greater use of Rogerian response categories only with nonchronic callers.
King et al. (2003) Kids Help Line Australia	Uncontrolled evaluation study. Field investigation.	101 callers to Kids Help Line who indicated either suicidal ideation or suicidal intent.	Changes during calls in level of suicidality: Mental state, suicidal ideation and suicidal urgency.	A pool of items were extracted from Mini International Neuropsychiatric Interview.	There was a statistically significant decrease in the callers' mental state total score from the beginning to the end of the calls, $t(100) = 8.05, p < .0005$, with a large effect size ($\eta^2 = .39$). Similarly, there was also a statistically significant decrease in the callers' suicide ideation total from the beginning to end of the suicide calls, $t(100) = 12.66, p < .0005$, with an even larger effect size ($\eta^2 = .62$). Concerning suicidal urgency, there was a substantial decrease in the proportion of cases rated as imminent risk by both raters from the beginning (47.5%) to end (7%) of the call and a substantial increase in the proportion of callers rated as no suicide urgency risk from beginning (2%) to the end of the call (58.5%).
Gould et al. (2007) Hotlines USA	Uncontrolled evaluation study	1,085 adult suicidal individuals calling eight US telephone crisis. Follow-up assessments with 380 suicidal callers.	Proximal outcomes: intent to die, hopelessness, and psychological pain as measured by changes in callers' suicide state from the beginning to the end of their call and again within 3 weeks of their calls (follow-up).	Eclectic use of literature on assessment, treatment and case management of suicidal patients, empirical risk factors and on the Modified Scale for Suicidal Ideation.	For the 1,085 callers there was measured a significant reduction in suicide status from the beginning of the call (Time 1), to the end of the call (Time 2) on intent to die ($F \square \square 130.8, p \square \square .001$), hopelessness ($F \square \square 112.8, p \square \square .001$), and psychological pain ($F \square \square 181.4, p \square \square .001$). There were significant reductions in callers' psychological pain ($F \square \square 13.1, p \square \square .001$) and hopelessness ($F \square \square 17.0, p \square \square .001$) from the end of the call (Time 2) to follow-up (Time 3) among the 380 suicide callers who completed a follow-up assessment. However, there was no significant reduction in callers' intent to die during this period ($F \square \square 0.19, p \square \square .05$).
Mishara et al. (2007) 14 crisis lines in the Hopeline network. USA	Silent uncontrolled monitoring study	782 crisis intervention workers. Callers: n= Calls: n= 2,611	Proximal outcomes: Changes in suicidal behaviour: mood, emotional states, suicide intent.	Crisis Call Outcome Rating Scale (CCORS)	Over half the callers were rated as less confused and more decided by the end of the call, almost half were rated more resourceful and less helpless, 40% were rated more hopeful, and 38% were rated more confident. However, 11% of callers were rated more apprehensive at the end of the call, 9% sadder, 9.5% more helpless, 11% more hopeless, and 10% more confused.

Gould et al. (2015) Lifeline USA	Randomized controlled trial	1,410 suicidal individuals to 17 Lifeline centers in 2008–2009.	Changes during calls		Suicidal callers whose counselors had been ASIST-trained were significantly more likely than callers whose counselors had not been ASIST-trained to be rated by the silent monitors as becoming less depressed, less overwhelmed, less suicidal, and more hopeful during the course of the call. The odds ratios ranged from 1.31 (less depressed) to 1.74 (less suicidal). Thus, if callers spoke with ASIST-trained counselors rather than non-ASIST-trained counselors, the odds that callers would be less depressed were increased by 31%, and the odds that callers would be less suicidal were increased by 74%.
Becker (1997) Los Angeles Suicide Prevention Center (LASPC), USA	Uncontrolled evaluation study	129 callers reporting suicidal ideation, 50 male and 79 females, ranging from 14 to 66 years of age.	Immediate and intermediate assessments of changes in levels of distress and suicidal urgency.	Suicide Status Form: Psychache, perturbation, lethality, press, negative self-regard and hopelessness.	An immediate reduction in callers' level of suicidality was found over the course of the telephone call. In the period between the pre-intervention (time 1) and the post-intervention (time 2) there was a significant reduction in the scores, $t(23) = 5.14, p < .001$. The greatest decrease in the callers' level of suicidality was found to be between the (time 1) and time 3, $t(23) = 7.37, t < .001$. A significant decline in scores was also found for the time span between time 2 and time 3 one week later $t(23) = 3.52, c < .01$.
Strohl (2005) Telephone Crisis Services. USA	Uncontrolled evaluation study	157 suicidal callers, 109 females and 49 males, ranging in age from 18 to 70.	Immediate and intermediate assessments of changes in the suicide status: Intent to die, psychological pain and hopelessness.		Significant reductions of callers' suicidality at the end of calls and at a 2-3 week follow up assessment were found, as measured by intent to die, psychological pain, and hopelessness. Further exploratory analyses suggested associations between the callers' suicide characteristics, demographics, and outcome measures.
Chiang (2011) Taiwan National Suicide Hotline	Uncontrolled quasi-experimental pretest-posttest design.	300 callers: acute suicidal, suicidal and non-suicidal (42 % male; 58 % female).	Immediate assessment of three caller groups' differences in emotion and suicide risk during the call.	Suicide Risk Assessment of TLA (SRA-TLA). The Mental State Rating Scale (MSRS). The Suicide Risk Scale (SRS).	The telephone crisis service significantly improved the callers' mental status (decreased MSRS scores) and decreased suicidality (decreased SRS scores). The groups of callers were significantly different from each other on both MSRS and SRS. For MSRS, the suicidal group was the highest overall, followed by the acute group. The non-suicidal group was the lowest on MSRS. For SRS, the acute-suicidal group was the highest; the suicidal group was the second; and the non-suicidal group was the third.
Author(s) and setting	Type of study	Participants	Outcome measure (REUTILISATION RATE)	Measures	Study findings
Speer (1971) Erie County Suicide Prevention and Crisis Service (USA)	Correlational study	Suicidal callers of 3,536 calls	Intermediate assessments of caller re-use rates.		During a two-month monitoring period the telephone service handled 3,536 calls. Of these 1,494 calls (42 %) were deemed call-backs and 418 individuals re-used the telephone service. 66 % of the repeat callers called only once and 89,3 % called the service four times or less during the monitoring period.
Wold (1973) Los Angeles Suicide	Longitudinal follow-up study	184 suicidal callers	Caller assessment of re-use.	Data from interviews were summarized	23 % had recontacted the centre during the two-year interim period.

Prevention Center (USA)				for each caller by use of an 87-item data sheet of which some items were concerned with the interim period between the initial call and the follow-up interview.	
Apsler & Hoople (1976) Project Place Hotline, Boston, USA	Correlational study	Callers of 11.703 calls	Intermediate assessments of caller reuse rates.		11.703 callers responded to the questionnaire. 37 % of callers had used the service previously. 46 % of calls received a rating of 1 (representing "effective") and 54 % received a rating greater than 1. The rate of caller reuse was significantly related to the studied background variables (age, sex, residence, employment, caller problem, caller affect, and counsellor's self-ratings of effectiveness).
Gould et al. (2007) Hotlines, USA	Uncontrolled evaluation study	1.085 adult suicidal individuals calling eight US telephone crisis. Follow-up assessments with 380 suicidal callers.	Intermediate (follow-up) outcomes: Re-contact with the centre.		Of the 380 suicide callers who participated in the follow-up, 107 (28.2%) callers had another contact with the crisis center after their initial call. Of these callers, 59 (55.1%) callers had one additional contact, 19 (17.8%) callers had two contacts, 9 (8.4%) callers had three contacts, 4 (3.7%) callers had four contacts, 10 (9.3%) callers had between 5 and 30 contacts, and 6 (5.6%) callers did not remember the number of times.
Author(s) and setting	Type of study	Participants	Outcome measure (CALLER COMPLIANCE)	Measures	Study findings
Gould et al. (2007) Hotlines, USA	Uncontrolled evaluation study	1.085 adult suicidal individuals calling eight US telephone crisis. Follow-up assessments with 380 suicidal callers.	Intermediate (follow-up) outcomes: Follow through with referral.		Of the 380 suicide callers who participated in the follow-up 151 callers had been referred to a mental health resource. 35.0% of these followed through with these referrals in the period between the initial call to the centre and the follow-up assessment.
Gould et al. (2012) Lifeline, USA	Correlational study	Suicidal callers (n=376) and crisis (non-suicidal) callers (n=278) to 16 centres in the Lifeline Network from 14 states.	Intermediate (follow-up) outcomes: rates of mental health care utilization		51.9 % of suicidal callers who had received a mental health care referral utilized mental health services after their hotline call. Of those 31,1 % reported that they had accessed a mental health resource other than the one recommended during the call
Tapp et al. (1974) Suicide prevention and crisis service, Buffalo.	Correlational study	Callers to 40 calls: 20 shows and 20 no-shows.	"Shows" to a scheduled face-to-face appointment	Fowler technical effectiveness scale. Truax and Carkhuff scale.	A negative correlation between compliance and problem identification during calls were found.

Author(s) and setting	Type of study	Participants	Outcome measure (CALLER EVALUATION)	Measures	Study findings
Motto (1971), USA	Interview study	575 at-risk individuals and potential users of suicide prevention centres. Participants had been admitted to five inpatient services of a mental health centre because of depressive and/or suicidal states.	Evaluations by potential users of the suicide prevention centres.		11 per cent had utilized the suicide prevention service with 59 % of these reporting that they had received substantial help. 26 per cent indicated that they would be inclined to call the centres in the situation of difficulties. Motto concluded that telephone crisis services primarily served two functions: Helping acute crisis callers and those with "everyday problems" with low lethality.
Slem & Cotler (1973)	Questionnaire survey	1.763 high school students	Level of awareness of the hotline, the participants' perceptions of program functions and, if participants had used the hotline, their rating of it.		1.763 high school students responded to the questionnaires. With regard to recognition, 98 % had heard of the hotline. With regard to perceptions, the perceived functions appeared to be consistent with the overall goal of the programme. 96 (5,6 %) of the respondents had called the hotline of which 68 % rated the service as helpful. 32 % provided a negative assessment of the service.
Wold (1973) Los Angeles Suicide Prevention Center	Longitudinal follow-up interview study	184 relocated callers	Caller assessments of having felt helped and having had their life saved by contact with the centre.	Data from interviews were summarized for each caller by use of an 87-item data sheet of which some items were concerned with the interim period between the initial call and the follow-up interview. From the caller's point of view, had the SPC helped him/her? Had it saved his/her life? How?	80 % of callers felt they had been helped by their telephone contact with the center. The reason given for having felt helped was having someone with whom to talk. 28 % said that the contact to the centre had saved their life, 34 % said "maybe" and 38 % "no".
Gould et al. (2007) Hotlines, USA	Uncontrolled evaluation study	1.085 adult suicidal individuals calling eight US telephone crisis. Follow-up assessments with 380 suicidal callers.	Intermediate (follow-up) outcomes: Caller feed-back.	2 open-ended questions about what was or was not helpful about the call.	At follow-up, 380 suicide callers provided a total of 668 positive responses and 83 negative responses. 11.6% (n = 44) of suicide callers said that the call prevented them from killing or harming themselves. □

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	Lee (1999), Crisis and Information Centre, USA	Mixed methods programme evaluation	50 suicidal individuals (15 men and 35 women) ranging from 18-49 years of age.	Intermediate out- comes: Caller satis- faction at follow-up interview via tele- phone.	Client Satisfaction Questionnaire -3; semi- structured interviews.	Participants were classified as low (n=31), medium (n=11) or high (n=8) risk for suicide. Comparisons were made between participants' level of suicide risk and their CSQ (3) scores. No significant differences were detected between satisfaction and callers' level of suicide risk. All of the groups demonstrated high levels of satisfaction with the high-risk group being rated as most satisfied. Furthermore, CSQ-3 scores indicated that gender did not affect satisfaction levels. Participants demonstrated high level of satisfaction and would utilize the telephone crisis service again. The results indicated that the CIC effectively prevented participants from committing suicide and thus suggested that the mission of the centre was attained.
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	Ferns & Stace (2007), Samaritans, U K	Online survey on www.samari- tans.org.	515 respondents	Intermediate out- comes: caller satis- faction.		Overall user satisfaction: 54.8% of respondents stated they had contacted Samaritans when they were feeling suicidal. 73.5% of suicidal people felt that contact with Samaritans helped them take a decision not to end their own life. 48.1% respondents stated they had contacted Samaritans when they were thinking of harming themselves. 66.7% of people at risk of self-harm felt that contact with Samaritans helped them take a decision not to injure themselves. 80.3% stated they would use the service again. 79.0% stated they would recommend it to others. 64.8% of people felt more understood after contact with Samaritans. 42% of people felt more confident and 56.3% of people felt more in control. 63.4% of people felt less anxious after contact with Samaritans and 62.5% of people felt less isolated. 70.3% of people felt it helped them cope with the problem they were facing.
37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	Pollock et al. (2010); Stace & Wyllie (2011); Coveney et al. (2012) Samaritans, UK	Mixed- methods 2- year evaluation	1,309 online respondents; 48 interviewees.	Intermediate out- comes: Level of satisfaction and perceived im- pact.		Respondents reported high levels of satisfaction with the service and perceived contact to be helpful. The median score for helpfulness of last contact was 7 (1 = <i>no help at all</i> to 10 = <i>very helpful</i>) and for overall perception of helpfulness it was 8. Approximately three quarters of respondents rated their overall perception of Samaritans services as "excellent" (31.8%, n = 268) or "good" (39.4%, n = 332). A further 14.6% (n = 123) rated the service as "reasonable," 4.8% (n = 40) as "bad," and 9.3% (n = 79) said it was "variable." Interviewees revealed that contact with Samaritans could be beneficial in helping them to calm down and so avert the possibility of self harm and suicide. Conclusion: Throughout all data strands, many expressed great appreciation for the support they had received from the volunteers, regardless of whether this was ongoing, or related to a single contact. However, only a minority (82; 12.2%) indicated that contact with Samaritans had had a longer-term impact.

Author(s) and setting	Type of study	Participants	Outcome measure (COUNSELLOR EVALUATION)	Measures	Study findings
Apsler & Hoople (1976) Project Place Hotline, Boston, USA	Correlational study	11.703 calls	Immediate outcomes: counsellor evaluations.	Intake data form.	Out of 11.703 calls 46 % of calls were rated as highly effective while the other 54 % of calls reflected moderate or low effectiveness on the rating scale. The 46 % were related to some of the background variables from the intake form, e.g. age (felt more effective with younger age groups), economic situation (felt less effective with callers supported by parents or public assistance and with housewives), sex (felt more effective with males), type of problem (felt less effective with drug abuse, crisis, and general counselling problems), level of affect (felt less effective with depressed and excited callers) and type of counsellor action (felt more effective when referrals had been made, information given or emergency van sent).
Gilat & Rosenau (2011). The Israeli Association for Emotional First Aid (ERAN), Israel	Qualitative study	12 volunteers from ERAN.	Volunteer evaluations	Open-ended questionnaire consisting of two items generating descriptions of perceived effective calls and explanations of the successful outcome.	Most of the calls perceived by the volunteers as particularly helpful were characterized by crisis intervention rather than on going emotional support (as e.g. provided to chronic callers). Furthermore, the findings showed that the major criterion for a successful conversation consisted of emotional, cognitive or behavioural changes in the caller's mental state between the beginning and the end of the call.