SYSTEMATIC REVIEW OF RESEARCH INTO FREQUENT CALLERS TO CRISIS HELPLINES

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SUMMARY

Crisis helplines first documented concern in the 1960s about a subgroup of callers making multiple calls. This subgroup of callers is often known as frequent callers. We conducted a systematic review of the published research into callers making multiple calls to crisis helplines from 1960 until 2012. The review aimed to identify the characteristics of frequent callers, their impact on crisis helplines, and interventions that respond to frequent callers. Two databases were searched, identifying 561 articles, of which 63 were relevant. Twenty-one articles from 19 separate studies presented empirical data about callers making multiple calls to crisis helplines. Of the 19 studies, three were intervention studies, five reported on surveys of callers and 11 were call record audits. Most studies were conducted in the USA and defined frequent callers as making two or more calls. Frequent callers were more likely to be male and unmarried compared to other callers. There were no reported differences between frequent callers and other callers with regards to mean age, mental health conditions and suicidality. Only three studies tested interventions designed to better manage frequent callers. These studies, even though small, reported reductions in the number of calls made by frequent callers. Knowing how best to respond to multiple callers requires robust studies which define frequent callers more broadly than simply the number of calls made and which are designed to increase our understanding of the reasons for and impact of multiple callers on crisis helplines.
INTRODUCTION

Crisis helplines for emotional wellbeing have existed since the 1950s, each with their own purpose and target group. Most were established to provide timely assistance to people who were experiencing a crisis of suicidality or depression. Crisis helplines have varied in the service model provided, from a non-directive, listening approach to a more directive approach. Callers to crisis helplines typically remain anonymous, call any time of the day, and speak to trained personnel who assist them to manage their crisis. Support provided is usually not of an ongoing nature. A mix of lay and professional personnel operate crisis helplines, some on a paid basis and some as volunteers.

Research suggests that people who make multiple calls to crisis helplines may be using services inappropriately. These callers are commonly known as frequent, chronic, multiple or repeat callers. In this paper we refer to them as frequent callers. The first study of frequent callers to crisis helplines for emotional wellbeing was published in 1965 and described them as callers who took up a lot of time with complex physical and mental health issues.

Crisis helplines struggle to know how to best respond to callers as they challenge the traditional crisis model of care with their contacts. Frequent callers seek help
on a regular basis from crisis helplines and do not always appear to have an immediate crisis. They are also seen to take up time which prevents other crisis calls from being taken. Crisis helplines have begun to consider different ways to respond to frequent callers, including limiting their access. However, concern exists over whether limiting their access may trigger a further crisis. Currently, crisis helplines manage this subgroup of callers in an ad hoc manner. There is a need for an evidence informed approach.

This paper presents the first systematic review of the published literature about frequent callers to crisis helplines. The aims of the systematic review were to:

- describe frequent callers, in terms of their socio-demographic and clinical characteristics, the nature and frequency of their calls, their use of other services and treatments, and the outcomes of their contact;
- discuss the impact that frequent callers have on crisis helplines; and,
- identify potential interventions designed to respond to the needs of frequent callers.
METHODS

Articles were included in the review if they presented empirical data on callers who made multiple calls to crisis helplines, and were published in English between 1960 and 2012. The exception was brief case studies, which were excluded.

SEARCH STRATEGY

Two databases, Medline and ProQuest, were searched in March 2013. The search terms included: (Suicide OR Depression OR Mental Health) AND (Emergency Telephone Advisory OR Helpline OR Hotline OR Crisisline OR Suicide Prevention Cent* OR Crisis Intervention Service OR Crisis Support Service) AND (Chronic OR Frequent OR Repeat) AND (Call* OR User). The reference lists of potentially relevant articles were searched to identify additional articles, which were obtained. Titles and abstracts were reviewed to identify relevant articles, and all duplicate records were removed. The full text article and citation of potentially relevant articles were downloaded into Endnote and read by AM. Articles about which there was uncertainty were discussed with the other authors and a decision was made about whether to include these articles. All articles which presented empirical data on callers who made multiple calls to crisis helplines were included.
DATA MANAGEMENT AND ANALYSIS

After identifying eligible papers, AM extracted relevant information from each article into an Excel spreadsheet. The information extracted included: authors, publication year, study aim, crisis helpline name and location, frequent callers definition, sample selection and size, time period and follow-up, data collection methods, variables measured, interventions, results, limitations, and conclusion. Data for each of these variables were directly taken from each article, categorised under the aims of this review and summarised in the tables. The ratio between calls and callers and the 95% confidence interval was calculated using STATA 12\textsuperscript{15} for the studies that provided sufficient information of the caller population. These results were discussed with JG, JP and BB. This paper provides a synthesis of these findings.
RESULTS

A total of 561 articles were identified through the database search and from within text references, after duplicate records were removed. Four hundred and ninety-eight articles were excluded after reading the title and abstracts as they did not have crisis helplines as their primary focus. Of the 63 full text articles reviewed, an additional 29 articles were excluded as they did not relate to callers making multiple calls. Thirty-four articles discussed callers who made multiple calls; however on further review only 21 presented empirical data, the remaining articles comprised opinion pieces and brief case studies (Figure 1). The review synthesises the findings of the 21 articles deemed to meet the inclusion criteria; a summary of these studies can be found in Tables 1 - 3. The 21 articles represented 19 separate studies as Gould et al. and Kalafat et al. reported on an evaluation of crisis helpline outcomes at eight sites in the United States; and Farberow et al. and Litman et al. presented findings on a study of frequent callers to a Los Angeles crisis helpline. In the 21 articles included in this review, callers who made multiple calls to crisis helplines were referred to as frequent, chronic or repeat callers. These callers are referred to as frequent callers in this review.

<FIGURE 1>

Of the 19 empirical studies, three were intervention studies (summarised in Table 1), five were surveys of crisis helpline callers (summarised in Table 2), and 11 were call record audits (summarised in Table 3). Studies varied in their data
collection methods and definition of frequent callers. Nine studies compared frequent callers with other callers. The data reported for frequent callers varied from only reporting the number of calls made by frequent callers to a more detailed presentation of caller demographics, suicide history and prior treatment for frequent callers. Ten studies presented data on a representative sample of callers to the crisis helpline.

The intervention studies all took place in North America; two in Canada and one in the USA. All were restricted by a small sample size and only one study used a randomised controlled design. Brunet et al. was the only intervention study to provide a specific definition of frequent callers.

A range of interview techniques were used in the studies that surveyed callers, with most completing one-off surveys. Nearly all of the survey studies defined frequent callers as making more than one call. Only the studies by Apsler and Coveney et al. surveyed more than 1,000 callers. All studies analysed a sub-sample of callers to crisis helplines. The studies by Apsler, Burgess et al. and Coveney et al. compared frequent callers with other callers.
The majority of the call record audit studies were completed before 1980 in North America. Only the studies by Ingram et al. and Watson et al. were completed after 2000. These had the largest sample sizes of the audit studies. There was greater variation in the definition of frequent callers for the audit studies compared to the survey and intervention studies. More than half of the audit studies presented some comparison of frequent callers with other callers.

Of all the studies, nine defined frequent callers as callers who made more than one call to a crisis helpline. Other studies defined frequent callers as callers who made a specific number of calls over a period of time. These definitions ranged from three calls over one month, 10 calls over one, six or eight months or 19 calls over two years. The study by Johnson and Barry discussed the need for a definition of frequent callers to include not only the number of calls but also the pattern of calls and follow-up policy of the crisis helpline. Their definition separated callers into six types of calling patterns based on number of calls made, the time period over which the calls occurred and whether each call was related to the same problem or multiple problems. There were four studies that did not provide a specific definition of
frequent callers but referred to them as a subgroup of callers who made multiple calls.\textsuperscript{19, 21, 32, 35}

Ten of the studies reported on a representative sample of all callers to crisis helplines.\textsuperscript{13, 22-25, 28-31, 33} Table 4 presents for these studies the number of calls made, the number of individual callers, the number of callers making two or more calls and 10 or more calls, and the ratio between callers and calls per month. Together these studies reported on over 520,000 calls to ten separate crisis helplines. An example of the information presented in this table can be explained through the study by Lester.\textsuperscript{30} Over one year this crisis helpline received 3,910 calls from 2,128 individuals (callers). All of the calls received in the year of follow-up were analysed in the study. Of the 3,910 calls, 90\% of calls were by people who called two or more times, and 17\% of calls were made by people who called ten or more times. Of the 2,128 separate callers, 82\% called two or more times, and 1\% called ten or more times. The ratio between callers and calls was calculated to be one caller to 1.20 calls (95\% CI 1.14 – 1.26).

The ratio between callers and calls in all of the studies was more than one call per caller. In the 2006 study by Burgess et al.\textsuperscript{23} completed in Australia, the ratio between callers and calls was one caller to 4.14 calls (95\% CI 3.90 – 4.39) for one month of follow-up. Due to the wide variation in the methods, sample size and follow-up time period the
ratio calculated for these studies cannot be compared. The call ratio could not be calculated for three of the studies as insufficient information of the caller population was provided.\textsuperscript{22, 24, 28}

\textbf{TABLE 4}

The different study designs, sampling strategies, definitions of frequent callers and methods made it difficult to combine the data or to undertake a formal meta-analysis of the intervention studies. However, the studies addressed similar issues relating to frequent callers allowing the findings synthesised below to be presented around common themes.

\textbf{FREQUENT CALLERS’ CHARACTERISTICS}

Seven studies reported on the demographic characteristics of frequent callers.\textsuperscript{22, 23, 26-28, 30, 32} Of these studies, five compared frequent callers with other callers\textsuperscript{23, 27, 28, 30, 32} of which three reported on a representative sample.\textsuperscript{23, 28, 30} Based on the findings of these studies, frequent callers were more likely to be male\textsuperscript{23, 27, 28, 32} and unmarried.\textsuperscript{23, 26, 27, 32} It is unclear whether frequent callers differed from other callers in terms of mean age,\textsuperscript{22, 23, 26-28, 30, 32} ethnicity\textsuperscript{22, 30, 32} and employment status\textsuperscript{22, 32} as few studies reported on these characteristics and presented inconsistent findings.
Frequent callers contacted crisis helplines because they were seeking social support, had mental health concerns, and/or experienced a physical illness. Mental health concerns were identified in three studies as the main reason for frequent callers contact. However, whether these issues were more commonly experienced by frequent callers compared to other callers remains unclear.

In the five studies reporting on suicidal behaviour, at least half of frequent callers were identified to have a history of suicidal behaviour. Frequent callers were more likely to have a history of suicidal behaviour than other callers. The severity of suicidal behaviour was higher for frequent callers compared to other callers in the studies by Greer and Sawyer and Jameton.

Frequent callers experienced mental health issues that included depression, panic attacks, confusion and overall distress, and personality disorder problems. Frequent callers were also identified in some studies as having a diagnoses of schizophrenia, possible psychosis, and social and simple phobias. These studies did not use validated measurements. The use of alcohol and drugs by frequent callers was unknown as only the studies by Greer and Sawyer and Jameton found an association but were completed in small samples in the 1970s. The study by Burgess et al. found frequent callers in Australia in 2006 were less likely to drink alcohol than other callers.
Using validated measurements, frequent callers in the study by Burgess et al.\textsuperscript{23} had significantly higher anxiety scores on the Goldberg Anxiety Scale (GAS). However, there was no difference between frequent and other callers on the Goldberg Depression Scale (GDS).\textsuperscript{23} Using the Profile of Mood States (POMS) scale, the study by Kalafat et al.\textsuperscript{17} found frequent callers experienced hopelessness and were more anxious compared to other callers. The study by Mishara and Daigle\textsuperscript{31} found frequent callers were less likely to have decreases in depression scores over time.

Four studies found that frequent callers were seeking help from several mental health professionals, with many already in formal treatment.\textsuperscript{18, 23, 25, 32} Up to 85\% of frequent callers in the study by Murphy et al.\textsuperscript{25} had a history of previous psychiatric treatment. However, in the study by Sawyer and Jameton\textsuperscript{32} there were some frequent callers (11\%) who only used crisis helplines for support and reported no contact with other mental health services.

The duration of calls made by frequent callers were found in the studies by Greer\textsuperscript{27} and Ingram et al.\textsuperscript{28} to be shorter than the calls made by other callers. Contracts for follow-up and referrals were often arranged by crisis helplines to ensure further support for frequent callers.\textsuperscript{27, 31} It is unknown whether these contracts were more likely to be prepared with frequent callers compared to other callers. However, it has been estimated
that between 16 – 50% of frequent callers follow through with the advice provided by the crisis helpline.\textsuperscript{16, 25} Reductions in the level of urgency during crisis calls were less likely to be seen with frequent callers compared to other callers in the study by Mishara et al.\textsuperscript{31}

The study by Apsler\textsuperscript{22} explicitly made the assumption that frequent callers found crisis helplines helpful because they continued to call. This assumption was supported by the findings of the study by Coveney et al.\textsuperscript{24} that measured frequent caller’s overall perception of helpfulness. This study found that frequent callers gave an average score of eight out of ten for helpfulness.\textsuperscript{24}

**IMPACT OF FREQUENT CALLERS ON CRISIS HELPLINES**

The studies in this review did not formally measure the impact of frequent callers on crisis helplines. However, some studies commented on the frequency, nature and appropriateness of calls made by frequent callers as being problematic for crisis helplines.\textsuperscript{13, 18, 19, 27, 28, 30, 32, 34, 35} Frequent callers were described as time wasters who took up a significant amount of time for crisis helplines, limiting the amount of time available for other callers.\textsuperscript{13, 17, 18, 29, 33, 34} They were seen to contact crisis helplines continuously with recurring problems without appearing to make discernable positive changes over time.\textsuperscript{18, 27, 28, 35} In responding to frequent callers on an ongoing basis, crisis
helpline workers were described as developing feelings of frustration and resentment and experiencing an overall emotional drain. These feelings have been associated with crisis helpline workers thinking of themselves as ineffective counsellors. One study also described frequent callers being treated differently to other callers as a result of these feelings.

INTERVENTIONS FOR MANAGING FREQUENT CALLERS

Three intervention studies were identified in the review (described in Table 1). The study by Barmann tested different responses to frequent callers. Fourteen frequent callers were identified from call records and seven were randomly assigned to the intervention. A counsellor was assigned to each caller with a limit on the amount of calling time they were permitted each week. If a crisis was experienced, callers were allowed to call at any time; however they were reminded of these restrictions. The mean number of calls for the intervention group reduced from 24 to 11 calls over a nine week period compared to 24 to 21 calls in the control group.

The study by Hall and Schlosar limited frequent callers to a maximum of two calls per day for 15 minutes per call with no contact allowed between midnight and 8:00am. Changes in suicide risk before and after the intervention were used to measure improvement, with minor reductions in frequent callers’ suicidal behaviour observed.
The number of hours spent on the phone by frequent callers reduced from 172 hours before the intervention to 82 hours five months post the intervention.\textsuperscript{21}

The study by Brunet et al.\textsuperscript{20} implemented a 6-month written correspondence intervention with 22 frequent callers. Callers were assigned a counsellor with whom they started a writing correspondence. No limitations were made on the number of calls they could make to the crisis helpline. Only 23\% (n=5) of the frequent callers, all female, completed the trial.\textsuperscript{20} Before the intervention the five frequent callers took up a mean total of 541 minutes over a three-month period compared to three months after the intervention where the mean total was 261 minutes.\textsuperscript{20}

Based on the findings in the survey and audit studies, they suggested techniques for responding to frequent callers that included: using a directive and rigid management technique,\textsuperscript{32, 33} discouraging the caller from contacting the service,\textsuperscript{30} limiting the call duration allowed,\textsuperscript{30, 32} implementing face to face contact,\textsuperscript{32} the service initiating contact with the caller instead of waiting for callers to contact the service,\textsuperscript{32} providing short term anxiety and depression treatment programs over the phone,\textsuperscript{23} and creating a specific management plan for each frequent caller.\textsuperscript{30}
DISCUSSION

This is the first systematic review of the research investigating the nature of callers making multiple calls to crisis help lines and the challenges they present. The review found that the research into frequent callers to crisis helplines is limited and of highly variable quality. Frequent callers were more likely to be male and unmarried. There were no reported differences between frequent callers and other callers with regards to mean age, employment, ethnicity, mental health conditions and suicidality. No study reported data on the impact of frequent callers on crisis helpline staff. Responses to frequent callers could include limiting the number and duration of calls allowed, and/or assigning a specific counsellor. These responses have been shown in the three intervention studies to reduce the number of calls made by frequent callers.

The strength of this review is that we have conducted an extensive search of the articles conducted in this area and have synthesised their findings according to themes. We have documented the research techniques utilised by studies investigating frequent callers in crisis helplines and provided an in-depth analysis of frequent caller characteristics. This review also provides a synthesis of the interventions for frequent callers and identifies areas for further research. The limitations of this review are that it can only be as strong as the studies that underpin it and as we have noted, there are various definitional and
methodological limitations with the studies included in the review. This review includes studies from over 40 years ago when telephone access was limited, and therefore the characteristics of frequent callers may have since changed.

A range of terms were used in the studies to refer to a group of callers who made multiple calls to crisis helplines. Most of these terms simply referred to callers who made more than one call. However, throughout the studies an underlying assumption emerged that crisis helplines are more concerned about the callers who may be using the service inappropriately rather than just callers who made multiple calls. A definition of calling more than once appeared to be used as a convenience definition to try and identify those callers that may be inappropriately using the service. Crisis helplines are interested in understanding those who may call inappropriately so that they can respond to them more effectively.

In order to understand the callers who may be calling inappropriately, an improved definition of frequent callers is needed. Such a definition cannot simply be more than one call to crisis helplines, as one would expect people to commonly make a follow-up call after their initial crisis call. As suggested by Johnson and Barry\(^9\) the definition needs to extend beyond the number of calls made to consider the length, nature, appropriateness, and the period of time over which the calls are made. Having a
definition that considers more than the number of calls made, will assist crisis helplines in identifying the frequent callers in their caller population who may require a different response.

For crisis helplines to effectively respond to frequent callers they also need to understand the impact that frequent callers have on crisis helpline staff and how they differ from other callers on personal characteristics and mental health. In order to achieve this future research needs to include representative samples and validated measures. Crisis helplines could also explore a response that includes collaboration with external mental health professionals. This could be through referrals to mental health professionals or running telephone based cognitive behavioural therapy programs.

In conclusion, most callers to crisis helplines make more than one call. Future studies need a definition of frequent callers that considers more than the number of calls made. To understand how frequent callers impact on crisis helplines and differ from other callers, robust study design methods using larger sample sizes and validated measurements are required. Once these differences are understood, crisis helplines will be able to appropriately respond to frequent callers.
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The Authors declare that there is no conflict of interest.

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| Year    | Country | Data collection                      | Frequent caller definition | Intervention                                                                 | Sample size | Outcome                                    | Comparison groups                      |
|---------|---------|-------------------------------------|-----------------------------|-----------------------------------------------------------------------------|-------------|--------------------------------------------|----------------------------------------|
| Barmann, 1980 | 1970s | USA                                 | Recorded number of callers  | No clear definition provided                                                | 14 callers  | Reduction in mean number of calls         | Randomised Intervention v. control group |
| Brunet, 1994 | 1990s | Canada                              | Recorded number of callers  | Calls > 10/month                                                            | 5 callers   | Reduction in duration of calls            | Non-randomised Before and after         |
| Hall, 1995 | 1990s | Canada                              | Total number of calls       | No clear definition provided                                                | 1,351 calls | Reduction in suicide risk and duration of calls | Non-randomised Before and after         |
| Year      | Country | Sample size | Data collection                                                                 | Frequent caller definition | Data reported for frequent callers                                                                 |
|-----------|---------|-------------|---------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------|
| Murphy, 1969<sup>25</sup> | 1967    | USA         | 73 callers interviewed a sub-set of callers.                                   | Calls > 1                  | History of suicide attempt (Y/N), Previous psychiatric treatment (Y/N)                             |
|           |         |             |                                                                                 |                            | Followed advice (Y/N)                                                                               |
| Apsler, 1976<sup>22</sup>  | 1972 - 1973 | USA     | 11,703 calls completed a one-off standardized intake questionnaire with a sample of callers at the start of the call. Compared one off callers with > one calls. | Calls > 1                  | Age, Gender, Employment, Race                                                                    |
| Gould, 2007<sup>16</sup>  | 2003 - 2004 | USA         | 380 callers assessed suicidal callers during their call and invited them to complete a survey with a follow-up interview. | Calls > 1                  | Number of frequent calls, Referral follow-ups                                                   |
| Kalafat, 2007<sup>17</sup> | 2003 - 2004 | USA         | 801 callers assessed crisis callers during their call and invited them to complete a survey with a follow-up interview (excluded frequent callers from initial cohort). | Calls > 1                  | Number of frequent calls, Suicidal thoughts, Profile of Moods States – Modified (POMS-M)         |
| Burgess, 2008<sup>23</sup>  | 2006    | Australia   | 270 callers completed a one-off 60-item questionnaire with a sample of callers at the end of the call. Compared less frequent, frequent and very frequent callers. | Calls ≥ 3/month            | Age, Gender, Relationship status, Self-reported problems, Mental health measures, Mental health assistance (past month) |
| Coveney, 2012<sup>24</sup> | 2008 - 2009 | UK         | 1,309 callers online survey comparing one off callers with > one calls.       | Calls > 1                  | Reason for last contact, Overall perception of helpfulness                                         |
| Year       | Country | Sample size | Data collection | Frequent caller definition | Data reported for frequent callers |
|------------|---------|-------------|-----------------|----------------------------|-----------------------------------|
| Litman, 1965<sup>13</sup> | 1963 - 1964 USA | 1,336 callers | Call record audit of all evening calls. | Calls > 1 | Number of frequent callers |
| Farberow, 1966<sup>18</sup> | 1963 - 1964 USA | 2,675 calls | Call record audit of all calls to crisis helpline. | Calls > 1 | Number of frequent callers, Number making over 20 calls, Prior treatment |
| Wilkins, 1969<sup>35</sup> | 1967 USA | 200 callers | Call record audit to identify a random sample of 200 callers. | No clear definition provided | Number of frequent callers, Number making 6 or more calls |
| Lester, 1970<sup>30</sup> | 1968 - 1969 USA | 2,128 callers | Call record audit to identify all frequent callers and compare them to a random sample of 1 time callers. Compared frequent callers with one off callers. | Calls > 10 x 8 months | Age, Gender, Marital status, Race, Number of children, Parenthood, Living arrangements, Number of calls, Prior treatment, Suicidal history and risk |
| Speer, 1971<sup>33</sup> | 1971 USA | 2,459 callers | Call record audit of all calls. | Call > 1 | Number of calls |
| Bartholomew, 1973<sup>26</sup> | 1971 Australia | 8 callers | Call record audit of frequent callers. | Calls > 10 x 6 months | Age, Gender, Marital status, Number of calls, Common time of call, Presenting problems, Previous psychiatric treatment |
| Greer, 1976<sup>37</sup> | 1970s USA | 63 callers | Call record audit to identify frequent callers and compare to a random sample of all callers. Compared frequent callers with other callers. | Calls > 19 x 2 years | Age, Gender, Marital status, Call duration, Suicide history & risk, Mental health history, Drug & alcohol use, Prior treatment, Referrals |
| Study               | Time Period | Country | Sample Size | Methodology                                                                 | Findings                                                                                   |
|---------------------|-------------|---------|-------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Johnson, 1978       | 1973-1974   | USA     | 100 callers | Call record audit to identify a random sample of all callers. Compared one call v. one call with follow-up v. multiple calls > 2 days v. multiples calls 1 week v. multiple calls > 1 week. | 6 calling patterns Mean age by gender & call category, Type of call (person who made the call) |
| Sawyer, 1979        | 1970s       | USA     | 67 callers  | Call record audit of all calls to identify frequent callers and compare to a random sample of other callers. Compared frequent callers with other callers. | No clear definition provided Age, Gender, Marital status, Race, Employment Active callers Mental health diagnosis, Suicide history, Prior treatment, Referrals |
| Mishara, 1997       | 1988-1990   | Canada  | 263 callers | External research assistant monitored & coded a random sample of calls. Compared one off calls with > one call. | Calls > 1 Changes over the call (depression, urgency) Creation of contracts, Intervention style |
| Watson, 2006        | 2003        | Australia | 90,128 calls | Call record audit of all calls.                                             | Calls > 1 Duration of use Number of frequent callers |
| Ingram, 2008        | 2001-2005   | USA     | 349,464 callers | Call record audit of all calls. Compared one off calls with > one call.       | Calls > 1 Age, Gender Number of frequent callers, Reason for call, Call duration |
Table 4: The number of calls and callers by call frequency in studies reporting on a representative sample

| Study description | Duration (months) | Total calls | Number of calls by call frequency | Number of callers by call frequency | Ratio between callers and calls |
|-------------------|-------------------|-------------|-----------------------------------|------------------------------------|---------------------------------|
|                   |                   |             | Calls analysed^                   | Callers Analysed^                  |                                 |
|                   |                   |             | N      | n    | %     | n      | %     | N      | n    | %     | n    | %     | Ratio | 95% CI |
| Litman, 1965      | 12                | 1,607       | 1,607  | 321  | 20    | -      | -      | 1,336  | 53   | 4     | -    | -     | 1.20  | (1.14 - 1.26) |
| Murphy, 1969      | 3                 | 281         | 111    | 62   | 56    | -      | -      | 73     | 24   | 33    | -    | -     | 1.52  | (1.25 – 1.83)  |
| Lester, 1970      | 12                | 3,910       | 3,910  | 3,519| 90    | 665    | 17     | 2,218  | 1,819| 82    | 21   | 1     | 1.76  | (1.71 – 1.82)  |
| Speer, 1971       | 2                 | 3,536       | 3,536  | 1,485| 42    | 849    | 24     | 2,459  | 418  | 17    | 25   | 1     | 1.44  | (1.39 – 1.49)  |
| Apsler, 1976      | 12                | 11,703      | -      | -    | -     | -      | -      | -      | -    | -     | -    | -     | -     | -     |
| Johnson, 1978     | 12                | 1,235       | 462    | 319  | 69    | -      | -      | 100    | 36   | 36    | -    | -     | 4.62  | (4.21 – 5.06)  |
| Mishara, 1997     | 36                | 617         | 617    | 420  | 68    | -      | -      | 263    | 66   | 25    | -    | -     | 2.35  | (2.16 – 2.54)  |
| Burgess, 2008     | 1                 | 1,404       | 1,117  | 894* | 80    | 391    | 35     | 270    | 119* | 44    | 38   | 1     | 4.14  | (3.90 – 4.39)  |
| Ingram, 2008      | 60                | 499,066     | 349,464| 167,743| 48 | - | - | - | - | - | - | - | - |
| Coveney, 2012     | 12                | -           | -      | -    | -     | -      | -      | 1,309  | 707  | 54    | -    | -     | -     | -     |

^ = this data was not reported in the article; *study defined categorises as 1-2 calls and 3-9 calls; `the total number of calls was estimated from the data available from the article; ^ Not all calls received by the crisis helpline were analysed in the calculation of the number of calls and callers as some studies only analysed a sub-sample of callers.
Figure 1: Flow diagram of studies included in the systematic review

*Identification*
- 525 records identified through database searching
- 45 additional records identified through other sources

*Screening*
- 561 records after duplicates removed
- 561 records screened
  - 498 records excluded

*Eligibility*
- 63 full-text articles assessed for eligibility
  - 29 full-text articles excluded, with reasons
  - 34 articles eligible
  - 13 non-empirical articles excluded

*Included*
- 21 empirical articles included in the narrative review
  - 19 studies
  - 3 Interventions
  - 5 Follow up surveys
  - 11 Call record audits
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