Psychosocial and pharmacological treatments for deliberate self harm (Review)

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[Intervention Review]

Psychosocial and pharmacological treatments for deliberate self harm

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ABSTRACT

Background

Deliberate self-harm is a major health problem associated with considerable risk of subsequent self-harm, including completed suicide.

Objectives

To identify and synthesise the findings from all randomised controlled trials that have examined the effectiveness of treatments of patients who have deliberately harmed themselves.

Search strategy

Electronic databases screened: MEDLINE (from 1966-February 1999); PsycLit (from 1974-March 1999); Embase (from 1980-January 1999); The Cochrane Controlled Trials Register (CCTR) No.1 1999. Ten journals in the field of psychiatry and psychology were hand searched for the first version of this review. We have updated the hand search of three specialist journals in the field of suicidal research until the end of 1998. Reference lists of papers were checked and trialists contacted.

Selection criteria

All RCTs of psychosocial and/or psychopharmacological treatment versus standard or less intensive types of aftercare for patients who shortly before entering a study engaged in any type of deliberately initiated self-poisoning or self-injury, both of which are generally subsumed under the term deliberate self-harm.

Data collection and analysis

Data were extracted from the original reports independently by two reviewers. Studies were categorized according to type of treatment. The outcome measure used to assess the efficacy of treatment interventions for deliberate self-harm was the rate of repeated suicidal behaviour. We have been unable to examine other outcome measures as originally planned (e.g. compliance with treatment, depression, hopelessness, suicidal ideation/thoughts, change in problems/problem resolution).

Main results

A total of 23 trials were identified in which repetition of deliberate self-harm was reported as an outcome variable. The trials were classified into 11 categories. The summary odds ratio indicated a trend towards reduced repetition of deliberate self-harm for problem-solving therapy compared with standard aftercare (0.70; 0.45 to 1.11) and for provision of an emergency contact card in addition to standard care compared with standard aftercare alone (0.45; 0.19 to 1.07). The summary odds ratio for trials of intensive aftercare plus outreach compared with standard aftercare was 0.83 (0.61 to 1.14), and for antidepressant treatment compared with placebo was 0.83 (0.47 to 1.48). The remainder of the comparisons were in single small trials. Significantly reduced rates of further self-harm were observed for depot flupenthixol vs. placebo in multiple repeaters (0.09; 0.02 to 0.50), and for dialectical behaviour therapy vs. standard aftercare (0.24; 0.06 to 0.93).

Authors' conclusions

There still remains considerable uncertainty about which forms of psychosocial and physical treatments of self-harm patients are most effective, inclusion of insufficient numbers of patients in trials being the main limiting factor. There is a need for larger trials of treatments associated with trends towards reduced rates of repetition of deliberate self-harm. The results of small single trials which have been associated with statistically significant reductions in repetition must be interpreted with caution and it is desirable that such trials are also replicated.

PLAIN LANGUAGE SUMMARY

Psychosocial and pharmacological treatments for deliberate self harm

Deliberate self-harm is a major health problem associated with considerable risk of subsequent self-harm, including completed suicide. This systematic review evaluated the effectiveness of various treatments for deliberate self-harm patients in terms of prevention of further suicidal behaviour. From the results of 23 randomized controlled trials the reviewers concluded that more evidence is required to indicate what the most effective care is for this large patient population. Promising results were found for problem-solving therapy, provision of a card to allow emergency contact with services, depot flupenthixol for recurrent repeaters of self-harm and long-term psychological therapy for female patients with borderline personality disorder and recurrent self-harm. However, insufficient numbers of patients in nearly all trials limit the conclusions that can be reached. More evidence is required to determine the most effective treatment for deliberate self-harm patients and larger trials are badly needed.

BACKGROUND

In many countries, suicidal behaviour has been identified as a major public health problem, both with regard to mortality and treatment of patients who have deliberately harmed themselves. In 1984, all member states of the European Region of the World Health Organization adopted a common European health policy including 38 targets for attaining health for all. In one target the public health importance of suicide and deliberate self-harm is recognized as a major cause of mortality and morbidity. The target states that 'by the year 2000 there should be a sustained and continuing reduction in the prevalence of mental disorders, and improvement in the quality of life of all people with such disorders, and a reversal of the rising trends in suicide and deliberate self-harm' (WHO 1982; WHO 1986). The United Nations has also highlighted the importance of suicide prevention (UN 1996).

In Europe, most attention to suicide prevention strategies has occurred in Scandinavia, with Finland having a very sophisticated programme based on a national psychological autopsy study, and Sweden, Norway and Denmark having their own programmes.

In Belgium and The Netherlands, suicide prevention is currently not included in public health policy. However, in Belgium efforts are being made by the Minister of Health to develop a suicide prevention programme.

The Australian Government through its Commonwealth Depart-

ment of Human Services and Health has made a commitment to reducing suicide and suicidal behaviour, with a particular focus on youth suicide. No specific targets have been set, but considerable funds have been allocated for programmes aimed at the reduction of suicide. The New Zealand Government has recently commissioned a report to assist its suicide prevention policy.

In the USA, attention has been paid to prevention of youth suicide, and a more general discussion of suicide prevention has taken place in Canada.

In the UK the former Government established two suicide targets for the year 2000. The first target was a reduction in the overall suicide rate by 15%, and the second a reduction in the suicide rate of people with severe mental illness of 33% (DOH 1992). The present Government has included a target of a reduction in the rate of death by suicide and undetermined injury of 17% by the year 2010 (DOH 1998). There has until now been an absence of assimilation of knowledge about the effectiveness of preventive measures or of specific treatments of those at risk (Gunnell 1994).

While it is difficult to examine the effects of treatments on rates of completed suicide, intervention following non-fatal suicidal behaviour is more amenable to evaluation. This is directly relevant to suicide prevention, because the risk of suicide following deliberate self-harm (DSH) is considerable. Thus, at least 1% of patients referred to general hospitals in the United Kingdom for DSH die by suicide within a year of an episode of DSH, and 3-5% within 5-10 years (Hawton 1988). Rates of suicide following DSH are considerably higher in some other countries where the DSH population has an older age profile and includes more patients with major psychiatric disorders (e.g. Rygnestad 1997). Looked at the other way around, 40-50% of people who die by suicide have previous episodes of DSH (Ovenstone 1974). In studies of risk in different psychiatric patient populations a history of DSH is the best predictor of eventual suicide, with those who have repeated episodes of self-harm being at the greatest risk. DSH is more common among females; in most studies, two thirds of patients who have self-harmed are females. However, since the mid 1980s, DSH rates in some European countries have increased among young males (Hawton 1992; Kerkhof 1994).

At the present time in the UK, partly as a result of the former Government's suicide targets, there is considerable focus on improving the standards of general hospital services for suicide attempters. The Royal College of Psychiatrists has published consensus guidelines on standards for such services which mainly address assessment procedures (RCP 1994). There is a need for assimilation of evidence both with regard to these procedures and especially, subsequent treatment. Descriptive reviews of treatment outcomes in DSH patients have been published previously but have not included systematic screening of the literature, quality ratings and meta-analysis (Hirsch 1982; Dew 1987; Moller, 1992; Hawton 1989a; Hawton 1997a), or have also been based on heterogeneous groupings of treatments which do not inform clinical practice (van der Sande 1997).

In this review we have focused on deliberately initiated acts of self-harm with non-fatal outcome, including both self-poisoning and self-injury. Different terms have been proposed to describe the same type of behaviour, such as 'attempted suicide', 'parasuicide', and 'deliberate self-harm'. No consensus has yet been reached about one common term. In this review we will use the term 'deliberate self-harm' (DSH) as this term is more accurate in terms of the range of motives that lead to self-destructive behavior. In the review we will not include studies concerning acts of self-injury as a symptom of mental retardation.

OBJECTIVES

1) To identify all RCTs of treatments following DSH, and to conduct a meta-analysis (where possible) to compare the effects of specific treatments (e.g., cognitive behavioural therapy or psychopharmacological treatment) and standard types of aftercare (e.g., emergency room service, psychiatric assessment) or control treatments (e.g. placebo) for DSH.

2) To test the hypothesis that specific treatments are more effective for DSH than standard or other control types of aftercare.

3) To test the hypothesis that trials which include only patients who have a history of previous DSH result in greater differences in outcome between treatment conditions than trials that include a mixture of 'repeaters' and 'first timers'.

In our previous version of this review we stated that we hoped to examine other issues. First, that female DSH patients comply with and also benefit more from treatment (both specific treatments and standard types of aftercare) than males. Unfortunately, our efforts to obtain extra data from authors pertaining to this issue have not been successful. Second, that there would be a difference in outcome between patients carrying out a first act of DSH and those who are repeaters. We also wished to examine the effects of treatment for episodic self-harm behaviour (e.g. habitual self-cutting) but no such studies appear to have been published.

METHODS

Criteria for considering studies for this review

Types of studies

We sought to identify all randomized controlled trials of specific psychosocial and physical treatments versus any control in the treatment of DSH.

Types of participants

Participants were males and females of all ages, who shortly before entering the study had all engaged in any type of deliberately initiated self-poisoning or self-harm. We did not include trials in which the participants were suicide ideators (without self-harm) nor those of people with depression in which DSH was an outcome variable.

We did not include studies concerning treatment in the mentally handicapped where DSH was repetitive behaviour (e.g. head banging), because the intention is probably rather different to that involved in DSH in other populations.

Types of interventions

All psychosocial and/or psychopharmacological treatment versus standard or less intensive types of aftercare.

Types of outcome measures

The main outcome measure used to assess the efficacy of treatment interventions for DSH was the rate of repeated self-harm (fatal and non-fatal) within a follow-up period of up to 2 years.

We had hoped to examine other outcome variables e.g. compliance with treatment, depression, hopelessness, suicidal ideation/thoughts, change in problems/problem resolution. Unfortunately, our attempts to obtain data from trialists to make these analyses possible have not been successful.

Search methods for identification of studies

The search strategy included the following sources:

i) Electronic databases:

MEDLINE (from 1966-February 1999); PsycLit (from 1974-March 1999); Embase (from 1980-January 1999); The Cochrane Controlled Trials Register (CCTR) No.1 1999.

The search term used was;

Suicid*

(ii) Full-text searching/hand searching:

For the previous version of our review we hand-searched ten specialist journals in the fields of psychology and psychiatry including all the English language suicidology journals. We have now updated the search for these specialist journals until the end of 1998. The journals searched were as follows:

Archives of Suicide Research, 1995-1998*

Crisis, 1980-1998*

Suicide and Life-Threatening Behavior, 1971-1998*

Der Nervenarzt, 1950-1979

Journal of Adolescence, 1978-1996

Journal of Affective Disorders, 1994-1996

Journal of the American Academy of Child and Adolescent Psychiatry,1978-1996

Journal of Clinical Psychiatry, 1978-1996

Journal of Psychiatric Research, 1961-1972; 1985-1996

Social Psychiatry, 1966-1987 and Social Psychiatry & Psychiatric Epidemiology, 1988-1996

* Search updated for current version of review.

(iii) Checking reference lists:

The reference lists of all relevant papers known to the investigators of treatment of self-harm patients were checked.

(iv) Personal communication:

The authors of trials and other experts in the field of suicidal behaviour were consulted to find out if they knew of any published or unpublished RCTs of treatment of self-harm patients.

Data collection and analysis

SELECTION OF TRIALS

Electronic databases:

One reviewer screened the abstracts of all publications which were obtained by the search strategy. A distinction was made between:

1) eligible studies, in which any psychological and/or psychopharmacological treatment was compared with a standard type of aftercare.

2) general treatment studies, without any control treatment.

The original articles of the eligible studies were screened in order to determine the status (RCT/CCT) of the study, and whether they were relevant for the purpose of the review.

DATA EXTRACTION

We extracted data from each eligible trial concerning the characteristics of patients, the details of the interventions used and outcome measures used to evaluate the efficacy of the treatments studied. This was carried out by two reviewers independently of each other. Where disagreements occurred these were resolved through consensus discussions with a third member of the group of reviewers.

QUALITY ASSESSMENT

The quality of the papers was rated by two independent reviewers blind to their authorship according to the recommended Cochrane criteria for quality assessment (Sackett 1997). This rating system is based on the finding that the quality of concealment of allocation can affect the results of trials (Schulz 1995). Studies were assigned a quality rating from C (poorest quality) to A (best quality). Thus, trials rated as inadequately concealed (e.g. via alternation or reference to an open random number table) were given a rating of C. Trials that did not give adequate details about how the randomization procedure was carried out were given a rating of B. Trials that were deemed to have taken adequate measures to conceal allocation (e.g. serially numbered, opaque, sealed envelopes; numbered or coded bottles or containers) were rated as A quality. We contacted authors of trials for more information where the concealment of allocation was not clearly reported (i.e. where trials were initially in category B). Where raters disagreed the final rating was made by consensus, including the opinion of a third member of the group of reviewers.

GROUPING OF THE STUDIES

Studies which shared similar treatment strategies were grouped by consensus of the reviewers, blind to the outcome data. The first category (PROBLEM SOLVING THERAPY VS. STANDARD AFTERCARE) included studies in which participants in the experimental group were offered some form of problem-solving therapy which was compared with standard aftercare. The second group (INTENSIVE INTERVENTION PLUS OUTREACH VS. STANDARD AFTERCARE) included studies in which the patients in the experimental group had greater access to therapists than in standard care, and where efforts were made to keep contact with patients through some form of outreach (e.g. home-based treatment either as standard or for those patients who defaulted on appointments at a clinic). The third group (EMERGENCY CARD VS. STANDARD AFTERCARE) included studies in which patients in the experimental group, in addition to being offered standard aftercare, were given an emergency contact card with which they either had 24-hour access to emergency advice from a psychiatrist (Morgan 1993), or could admit themselves to hospital (Cotgrove 1995). In only one other group (ANTIDEPRESSANT MEDICATION VS. PLACEBO) was there more than one trial. The remainder of the studies are reported singly.

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies.

Twenty three studies were identified through the combined search strategies as eligible for inclusion in the study. All reports were published. However, two studies (Hirsch 1982; Montgomery 1979) have not been published in full. A detailed report of one of the studies was obtained from conference proceedings (Montgomery 1979) and the full report of the other trial was provided by the author in the form of an unpublished manuscript (Hirsch 1982). Six studies were reported in more than one publication (Montgomery 1979; Hirsch 1982; Torhorst 1987; Linehan 1991; Harrington 1998; Evans 1999). Some of these reports included outcome data for different variables than those described in the initial reports. One further randomised controlled trial of DSH patients was identified but this did not include repetition of deliberate self-harm as an outcome variable (Patsiokas 1995). We tried, unsuccessfully, to obtain this information from the authors of this trial.

The included trials comprised 3014 randomised participants of whom 2832 had outcome data regarding repetition of DSH.

Risk of bias in included studies

The assessment of quality of concealment of allocation resulted in 16 trials (70%) being given rated as 'A' quality (the highest rating - for adequate concealment), 3 trials (13%) being given a rating of B (for unclear concealment), and 4 trials (17%) being given a rating of C (inadequate concealment). Quality scores for individual trials were as follows:

Chowdhury et al 1973 C
Welu 1977 C
Gibbons 1978 A
Montgomery et al 1979 A
Hawton 1981 A
Liberman & Eckman 1981 B
Hirsch 1982 A
Montgomery et al 1983 A
Hawton 1987 A
Torhorst 1987 B
Torhorst 1988 B
Salkovskis et al 1990 A
Waterhouse & Platt 1990 A
Linehan 1991 A
Allard et al 1992 A
Morgan 1993 A
McLeavey 1994 C
Cotgrove 1995 C
van Heeringen et al 1995 A
van der Sande et al 1997 A
Evans et al 1999 A
Harrington et al 1998 A
Verkes 1998 A

Effects of interventions

PROBLEM SOLVING THERAPY VS. STANDARD AFTERCARE: All five studies (Gibbons 1978; Hawton 1987; Salkovskis 1990; McLeavey 1994; Evans 1999) reported reduced repetition of DSH in patients in the experimental groups. However, the summary odds ratio of 0.70 (95% confidence interval 0.45 to 1.11) was not statistically significant. Excluding the one trial which did not have the highest quality of concealment of allocation (McLeavey 1994; which also compared two types of problem-solving therapy, the control type being standard care at the time of the study) made little difference to the summary odds ratio (0.74; 0.46 to 1.20). We examined separately the two trials in this category which included only repeaters (Salkovskis 1990; Evans 1999). The summary odds ratio for this analysis was 0.43 (0.13 to 1.39). The summary odds ratio for the trials which included both repeaters and participants without previous DSH was 0.77 (0.47 to 1.27).

INTENSIVE INTERVENTION PLUS OUTREACH VS. STANDARD AFTERCARE: There was no consistent direction of effect amongst studies in this group (Chowdhury 1973; Welu 1977; Hawton 1981; Allard 1992; van Heeringen 1995; Van der Sande 1997); the summary odds ratio for this comparison was

0.84 (0.62 to 1.15). Inclusion of only the trials with the highest quality of concealment of allocation did not markedly alter the summary odds ratio (0.86; 0.60 to 1.23).

EMERGENCY CARD VS. STANDARD AFTERCARE: In both studies in this comparison (Morgan 1993; Cotgrove 1995) there was a trend towards less repetition of self-harm in the experimental group but the summary odds ratio of 0.45 (0.19 to 1.07) was not significant. The odds ratio was similar when only the results of the trial with the highest quality rating (Morgan 1993) were analysed (0.43; 0.15 to 1.27).

DIALECTICAL BEHAVIOUR THERAPY VS. STANDARD AFTERCARE: In this study (Linehan 1991) there was a significantly lower rate of repetition of self-harm during the follow-up period in patients who received dialectial behaviour therapy (0.24; 0.06 to 0.93). This comparison was restricted to a sub-group of randomly assigned patients which was smaller than that which entered the original trial (Linehan 1991).

INPATIENT BEHAVIOUR THERAPY VS. INPATIENT INSIGHT-ORIENTATED THERAPY: The small sample size of the single study in this comparison (Liberman 1981) precludes meaningful conclusions from the odds ratio analysis (0.60; 0.08 to 4.45).

SAME THERAPIST VS. DIFFERENT THERAPIST: The repetition rate in the group of patients who saw the same person for aftercare who assessed them in hospital following their initial episode of DSH was significantly higher than that of patients who had a change of clinician; odds ratio 3.70 (1.13 to 12.09). However, the authors (Torhorst 1987) reported that in spite of randomization there were several imbalances between the experimental and control groups resulting in a greater prevalence of risk factors for repetition in the experimental group. It is of note that continuity of therapist resulted in 48/68 (71%) of patients attending at least one outpatient treatment session compared with 34/73 (47%) of patients in the control group; odds ratio 2.75 (1.37 to 5.52).

GENERAL HOSPITAL ADMISSION VS. DISCHARGE: The odds ratio from the one study in this category (Waterhouse 1990) did not indicate a beneficial effect of general hospital admission following DSH (0.75; 0.16 to 3.60). It is important to note, however, that only 15% of patients referred were eligible for inclusion in the study as only those attempters at low risk and without immediate medical or psychiatric needs could be considered for discharge without treatment. The follow-up period was relatively short.

FLUPENTHIXOL VS. PLACEBO: In this single trial (Montgomery 1979) there was a significant reduction in repetition of DSH in patients receiving flupenthixol (0.09; 0.02 to 0.50). The trial was relatively small and all the patients were repeaters.

ANTIDEPRESSANTS VS. PLACEBO: The pooled odds ratio for the three studies in this category (Draper 1982; Hirsch 1982; Montgomery 1983; Verkes 1998) indicates no apparent benefit regarding repetition of DSH for patients treated with mianserin, nomifensine or paroxetine compared with placebo medication; 0.83 (0.47 to 1.48). For one of the studies (Draper 1982; Hirsch 1982), the results for the patients given mianserin were combined with the results for those who had received nomifensine to form the experimental group of 'patients receiving anti-depressant medication'. (It should be noted that nomifensine is no longer available). In the study of paroxetine vs. placebo (Verkes 1998), the authors conducted subgroup analyses of patients with less than five previous acts of DSH ('minor repeaters') and those with five or more ('major repeaters'). On the basis of Kaplan-Meier Curves for probability of another suicide attempt the authors reported a significant reduction in repetition in patients in the minor repeaters group who received paroxetine compared with those who received placebo, but not in the major repeaters group.

LONG-TERM THERAPY VS. SHORT-TERM THERAPY: There was no indication from this study (Torhorst 1988) that, for patients with a prior history of self-harm, long-term therapy was more effective in terms of preventing repetition of DSH than short-term therapy; odds ratio 1.0 (0.35 to 2.86).

HOMEBASED FAMILY THERAPY VS. STANDARD AFTERCARE: The odds ratio from the one study in this category (Harrington 1998) did not demonstrate a beneficial effect of family therapy carried out in the patient's home (1.02; 0.41, 2.51). The authors of this trial reported a subgroup analysis of patients who were not depressed at entry to the trial: fewer of those who received home-based family therapy reported suicidal ideation at both two months and six months follow-up compared to those who received standard aftercare.

DISCUSSION

The results of this updated systematic review indicate that there continues to be insufficient evidence on which to make firm recommendations about the most effective forms of treatment for patients who have recently engaged in DSH. This is a serious situation given the size of the problem of DSH throughout the world (Morgan 1993; Davis 1991; Schmidtke 1996; Hawton 1997b), and its importance for suicide prevention (Gunnell 1994).

The main problem with nearly all trials in this review is that they included far too few subjects to have the statistical power to detect clinically meaningful differences in rates of repetition of DSH between experimental and control treatments, if such differences existed. Rarely was there evidence that prior power analyses had been conducted.

In nearly all trials the subjects were recruited after general hospital attendance because of DSH. Some trials just included self-poisoning patients, who constitute the large majority of DSH patients (Hawton 1997b), others both self-poisoning and self injury patients, whilst some did not specify the method of self-harm. Most of the studies focused on patients who could be treated as outpatients. Patients who, for example, required psychiatric hospital in-

patient care because of severe mental illness and, or serious suicide risk, were excluded, but these comprise the minority of DSH patients presenting to general hospitals (Hawton 1997b). The studies examined are, therefore, of relevance to a large proportion of DSH patients who will be treated in the community. Most patients in the studies had a history of previous episodes of self-harm, and in nine trials the whole sample consisted of repeaters (Chowdhury 1973; Montgomery 1979; Liberman 1981; Montgomery 1983; Torhorst 1988; Salkovskis 1990; Linehan 1991; Verkes 1998; Evans 1999). Only one study included only patients with no previous history of self-harm (Morgan 1993).

The classification of the trials into groups presented some difficulties, particularly the group of trials of intensive intervention plus outreach. This group contained the most heterogeneous range of trials.

In view of the considerable problem of DSH in adolescents in many countries (Hawton 1992; Schmidtke 1996) it is surprising that only two trials focused specifically on this specific clinical population (Cotgrove 1995; Harrington 1998). The trial of home-based family therapy versus standard aftercare for adolescents by Harrington et al (Harrington 1998) is interesting in that non-depressed patients who were allocated to receive family therapy showed a greater reduction in suicidal ideation at follow-up than those who were allocated to standard aftercare. This interesting finding, which was based on post-hoc subgroup analyses requires verification.

The comparison intervention for most of the studies of psychosocial intervention was standard care. This will probably vary from centre to centre and details of this care were usually not provided. Variability in standard aftercare of DSH patients in different countries and regions may influence the relative effectiveness of experimental interventions in particular settings. Future studies in which standard care is included should define precisely the nature of the treatment patients receive.

The dependent variable studied so far in this review, namely repetition of self-harm, was not consistently defined and measured in a standard way across all studies. In most studies repetition was based on hospital referral for further DSH, whereas in some studies interviews with patients and other informants also identified episodes of self-harm which did not result in hospital referral. Furthermore, it is possible that different treatment conditions may be associated with differences in the extent to which subjects who repeat actually present to hospital, because of the effects of treatment on willingness to seek hospital help. Such an effect, if marked, could seriously affect the apparent result of a trial. This is an important potential bias in the trials which use routine service data (as opposed to interviews) to ascertain repetition.

Promising results were found for problem solving therapy, which is a brief and reasonably easily taught form of treatment (Hawton 1989a). A larger trial of this treatment approach is required. There were also trends favouring provision of an emergency access card in addition to standard aftercare but again a larger trial is required, including specific attention to what role the card might play since only a small minority of patients actually used the facility provided by possession of the card (Morgan 1993; Cotgrove 1995).

For female patients with borderline personality disorder who have a history of multiple episodes of DSH there have been promising results from a single study of dialectical behaviour therapy (Linehan 1991), which is similar to cognitive behavioural therapy (Linehan 1993). A larger replication study is required because of the small size of this study and the fact that follow-up information on repeated self-harm was only obtained in a subgroup of patients. The intervention is very intensive, consisting of weekly group and individual therapy for one year plus 24-hour access to the therapist. Development and evaluation of a shorter form of this treatment more suited to general psychiatric service provision and investigation of its efficacy in male patients are needed.

The positive result of depot neuroleptic medication in a single small study of patients with repeated self-harm (Montgomery 1979) suggests that this treatment should be subjected to further evaluation in a larger study, although reluctance of patients to accept depot medication, side effects and other practical and ethical implications, may limit its applicability.

There was little indication that intensive intervention plus outreach was effective. However, in one relatively large study in this group, which evaluated community follow-up of patients who did not attend outpatient appointments (van Heeringen 1995), there was a statistically significant increase in outpatient attendance from 42.5% before the home visit (39.8 % in the control group) to 51.2% after the visit (odds ratio 1.58; 1.15 to 2.33), and a near significant difference in repetition of DSH of 10.7% compared with 17.4% (0.57; 0.32 to 1.02). Home treatment was also found to substantially increase the rate of take-up of treatment in another trial in this review (Hawton 1981). Assertive outreach for poorly compliant patients may, therefore, be a necessary component in maximising the delivery of any treatment which is shown to be effective.

There was no evidence that antidepressants were effective in preventing repetition of self-harm in DSH patients in general. However, it must be noted that one of the drugs investigated is no longer available (nomifensine) and the other (mianserin) is now little used. This review does not give any indication of whether other antidepressants could be of benefit in preventing further episodes of self-harm. However, it is interesting that in a recent trial of paroxetine (Verkes 1998), subgroup analyses indicated a marked reduction in patients who received the active drug and who had a history of one to four acts of DSH compared to similar patients who received placebo, but there was no indication of a similar benefit in those who had a history of five or more previous acts of DSH. Verification of this result is required as it was based

on post-hoc subgroup analyses. This finding raises the question of whether among patients with a history of DSH the type of treatment that may be effective will vary according to the number of previous episodes.

Repetition of DSH has been the sole outcome variable investigated in this review. We intended to investigate whether there is evidence of benefits with regard to other outcomes (e.g. depression, problem resolution). However, the data for these factors, where reported, were often inadequate for meta-analysis and we have been unable to obtain further information from authors. The groups of patients were often heterogeneous in term of gender, age and presenting problems. Further work in this area should examine the efficacy of interventions according to such factors.

We are keen to be informed of any current or planned trials in the treatment of DSH patients.

AUTHORS' CONCLUSIONS

Implications for practice

At present, evidence is lacking to indicate the most effective forms of treatment for DSH patients. This is a serious situation given the size of the DSH population and the risks of subsequent self-harm, including suicide.

Implications for research

As noted in the discussion, there is a need for large trials of the interventions shown in small trials to be of possible benefit. The main problem with nearly all trials in this review is that they included far too few subjects to have the statistical power to detect clinically meaningful differences in rates of repetition of DSH between experimental and control treatments, if such differences existed. The number needed is a function of both the expected rate of repetition (i.e. that in the control group) and the size of the difference. If the predicted rate were 10% in the experimental group versus 15% in the control, with, a total of 687 subjects would be required in each treatment group (80% power and a 5% significance level), while if the rates were 20% and 30%, 293 subjects would be required in each group (Pocock, 1983). Even when the results from similar trials are synthesized using meta-analytical techniques there are insufficient numbers of patients to detect such differences. The only statistically significant findings have come from smaller studies, which may reflect publication bias (Light and Pillemer, 1984).

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Allard 1992

Methods	Allocation: Subjects were randomly assigned using sealed and numbered envelopes. Follow up period: 12 months. N lost to follow up: 24/150 (16%) for repetition data.
Participants	Setting: Montreal, Canada. Inclusion criteria: i) resident in catchment area of hospital; ii) able to speak French or English; iii) no physical handicap preventing attendance; iv) not already in institutional care; v) capacity to give informed consent; vi) not sociopathic; vii) attempt more than a week ago. Numbers: 150 - 76 experimental, 74 control. Profile: 50% were repeaters. 55% female. 53% - substance abuse diagnosis. 87% - depression diagnosis. 45% - personality disorder diagnosis. Source of participants: patients presenting to hospital for a suicide attempt.
Interventions	Experimental: Intensive intervention: A schedule of visits was arranged including at least one home visit. Therapy provided where needed. Reminders (telephone or written) and home visits were made in case of missed appointments). Control: treatment by another staff team in the same hospital. Therapist: home visit by made social worker. Type of therapy offered: various - e.g. psychoanalytic psychotherapy, psychosocial, drug or behavioural therapy. Length of treatment: 12 months
Outcomes	Included: i) repetition of self-harm. Excluded: i) compliance
Notes	Repetition data from: hospital records, coroners office records plus interview with patients and interview with other informants e.g. relatives or friends of patient. Fatal attempts: three suicides in the experimental group, one suicide in the control group.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Chowdhury 1973

Methods	Allocation: Patients 'allocated alternately' to treatment groups. Follow up period: 6 months. N lost to follow up: none for repetition data.
Participants	Setting: Edinburgh, UK. Inclusion criteria: i) previous episode of deliberate self-harm (DSH); ii) patients with psychiatric diagnoses,

Chowdhury 1973 (*Continued*)

	alcohol and drug addiction were included. Numbers: 155 - 71 experimental, 84 control. Profile: All were repeaters (had previously self-harmed). Mean age not calculable. 57% female. 53% alcohol dependency. 76% personality disorder. 14% depression in normal personality. 35% depression in personality disorder. Source of participants: patients admitted to a general hospital for deliberate self-harm.
Interventions	Experimental: Special aftercare - regular out-patient appointments. Patients could also be seen without appointment. Patients who missed appointments were visited at home. Emergency telephone access 24 hours (evenings via Samaritans). Control: Normal aftercare - out-patient appointment to see psychiatrist or social worker. Non-attenders were not pursued. Therapist: psychiatrist, psychiatric social worker plus two part time social workers. Type of therapy offered: not described. Length of treatment: 6 months
Outcomes	Included: i) repetition of self-harm. Excluded: i) improvement in problems for those that had housing, financial or employment problems; ii) improvement in psychiatric state - overt symptoms.
Notes	Repetition data from: hospital records. Fatal attempts: no suicides mentioned. Repetition data by gender is provided.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Cotgrove 1995

Methods	Allocation: Random allocation using open number table. Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Chester, UK. Inclusion criteria: i) aged 16 years or under. Numbers: 105 - 47 experimental, 58 control. Profile: Patients aged 12.2 -16.7 years (mean 14.9). % repeaters not given. 85% female. 6% had major psychiatric disturbance (not specified). Source of participants: patients admitted to hospital following deliberate self-harm
Interventions	Experimental: Standard care plus green card (emergency card): Green card acted as a passport to re-admission into a paediatric ward in the local hospital. Control: Standard follow-up or treatment from a clinic or child psychiatry department. Therapist: not described. Type of therapy offered: Standard follow-up - not described.

Cotgrove 1995 (*Continued*)

	Length of treatment: one year.
Outcomes	Included: i) repetition of self-harm. Excluded: i) use of emergency card.
Notes	Repetition data from: clinical and hospital notes. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Draper 1982

Methods	See:Hirsch 1982
Participants	
Interventions	
Outcomes	
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Evans 1999

Methods	Allocation: opaque sealed envelopes opened sequentially. Follow-up period: 6 months for repetition. N lost to follow-up: 2 in control group for repetition data
Participants	Setting: London, UK. Inclusion criteria: i) personality disturbance (antisocial, disocial, impulsive or borderline; ii) at least one episode of deliberate self-harm in 12 months preceding entry to trial; iii) not diagnosed with alcohol or drug dependence, schizophrenia, or organic psychiatric disorder. Numbers: 34 - 18 experimental, 16 control Profile: Age range 16-50 years. Mean age not given. 100% were repeaters. 62% female. 100% had a personality disorder. Source of participants: patients seen after an episode of self-harm in two hospitals in the London area (

Evans 1999 (*Continued*)

	Paddington and Chelsea, Westminster).
Interventions	Experimental: Manual Assisted Cognitive Behavioural Therapy (MACT). Six chapters based on therapy for individuals with personality disorders developed by Davidson and Tyrer (1996) and Linehan et al (1991). 5 patients did not see a therapist and received all input from the booklets. 1 patient did not have any intervention. Control: Standard psychiatric treatment (various - 5 patients had contact with a psychiatrist, 3 saw a community mental health team, four saw a specialist social worker, 2 saw no mental health professional. Therapist: 1 psychiatrist, 2 nurses, 2 social workers. Type of therapy offered: Cognitive behavioural therapy for personality disordered patients. Involving basic cognitive techniques, problem solving, techniques for managing emotions and thoughts, relapse prevention plans. Length of treatment: 2-6 sessions.
Outcomes	Included: repetition of self-harm. Excluded: i) depression and anxiety ii) time until repetition iii) cost of care iv) social functioning
Notes	Repetition data from: interview and hospital records. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Gibbons 1978

Methods	Allocation: Patients were 'randomly assigned' using sequentially numbered, sealed, opaque envelopes. Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Southampton, UK. Inclusion criteria: i) over 17 years old; ii) no immediate suicide risk; iii) no formal psychiatric illness. Numbers: 400 - 200 experimental, 200 control. Profile: Self-poisoning patients. Repeaters and first timers. Mean age not available. 43.6% depressive neurosis. 2.2% phobic neurosis. 2.4% affective psychosis. 1.1% schizophrenia. 71% females. Source of participants: patients who presented to an A & E Dept. after deliberate self-poisoning.
Interventions	Experimental: Crisis orientated, time limited task-centered social work at home. Problem solving intervention for personal relationships, emotional distress, practical problems etc. Control:Routine service: 54% were referred to their GP, 33% received a psychiatric referral and 13% received other kinds of referral - not specified. Therapist: 2 social workers provided the service. 2 research psychiatrists did assessments. Type of therapy offered: Experimental: task centered case-work; Control: not specified. Length of treatment: 3 months

Gibbons 1978 (*Continued*)

Outcomes	Included: i) repetition of self-poisoning. Excluded: i) depression - no standard deviations, authors contacted who could not provide them; ii) use of psychiatric and social services; iii) change in social problems; iv) satisfaction with service.
Notes	Repetition data from: hospital records. Fatal attempts:no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Harrington 1998

Methods	Allocation: series of opaque sealed envelopes which contained either a blank sheet or one bearing the letter F (for family therapy) were prepared by a researcher. These were opened by a social worker when patients were assessed. Follow-up period: 6 months. N lost to follow-up: 13 for repetition data.
Participants	Setting: Manchester, UK. Inclusion criteria: i) children aged 16 years or younger; ii) living in a family; iii) not in social service care; iv) no current investigation of physical or sexual abuse; v) not currently in inpatient treatment; vi) not learning disabled; vii) not seriously suicidal; viii) had not 'self-harmed' (e.g. cutting or hanging). Numbers: 162 - 85 experimental, 77 control. Profile: Age range 10-16 years. Mean age 14.5 years. % who were repeaters not given. 89.5 % female 64.5% major depression, 10.5% conduct disorder. Source of participants: patients referred to mental health teams in 4 hospitals in Manchester, UK.
Interventions	Experimental: Manualised home based family therapy intervention (one assessment session plus 4 home visits) plus routine care. Control: Routine psychiatric aftercare - no home visits. Therapist: Two masters level psychiatric social workers. Type of therapy offered: Family therapy (Kerfoot, 1986; Kerfoot et al 1995). Length of treatment: one assessment and four home visits.
Outcomes	Included: i) repetition of self-harm. Excluded: i) depression ii) suicidal ideation iii) hopelessness iv) problem solving v) compliance vi) family functioning vii) satisfaction with treatment; viii) cost-effectiveness; ix) parent GHQ; x) Child social problem solving.
Notes	Repetition data from: not stated Fatal attempts: no suicides mentioned.

Risk of bias

Harrington 1998 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Hawton 1981

Methods	Allocation: 'Random number method' (sealed, opaque envelopes used). Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Oxford, UK. Inclusion criteria: i) over age 16; ii) not in psychiatric care; iii) not residing outside of study area; iv) not requiring treatment for alcohol or dug addiction; v) not in need of inpatient psychiatric care; vi) suitable for randomisation e.g. not of no fixed abode. Numbers: 96; 48 experimental, 48 control. Profile: Patients over the age of 16 years (mean age 25.3). 32% repeaters. No information on diagnoses. 70% female. Source of participants: patients admitted to a general hospital following deliberate self-poisoning.
Interventions	Experimental: Domiciliary therapy (brief problem-orientated)as often as therapist felt necessary. Open telephone access to the general hospital service. Control: Out-patient therapy once a week in an out-patient clinic in a general hospital.Length of treatment: up to 3 months. Therapist: two junior psychiatrists, one psychiatric nurse and 1 social worker. Type of therapy offered: In both groups brief problem-orientated counselling was used.
Outcomes	Included: i) repetition of self-harm. Excluded: i) mood; ii) social adjustment; iii) change in problems; iv) suicide ideation; v) GP questionnaire.
Notes	Repetition data from:hospital records, interview with patient and GP questionnaire. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Hawton 1987

Methods	Allocation: 'Randomization procedure' using sealed opaque envelopes. Follow up period: 12 months. N lost to follow up: none for repetition data.

Hawton 1987 (*Continued*)

Participants	Setting: Oxford, UK. Inclusion criteria: i) over age of 16; ii) registered with a general practitioner; iii) living up to 15 miles away from hospital; iv) suitable for out-patient counselling; v) not in need of psychiatric care (day-patient or in-patient; vi) not in current psychiatric care; vii) willing to accept aftercare offered. Numbers: 80 - 41 experimental, 39 control. Profile: 31% were repeaters. 66% female. No information on diagnoses. Source of participants: Patients admitted to a general hospital for self poisoning
Interventions	Experimental: Outpatient problem-orientated therapy by non-medical clinicians. Control: GP (family doctor) care: (e.g. individual support, marital therapy). Therapist: 5 counsellors from clinical team in the general hospital psychiatric service. Length of treatment: up to 8 sessions, each lasting on average 54 minutes. Type of therapy offered: Experimental: problem-solving therapy (Hawton and Catalan, 1987). Control: various e.g. marital, GP counselling, psychiatric referral.
Outcomes	Included: i) repetition of self-harm. Excluded: i) social adjustment; ii) Depression; iii) General Health Questionnaire; iv) improvement in target problems; v) attitudes to treatment; vi) GP interview
Notes	Repetition data from:hospital records plus interview with patient and interview with GP of patient. Fatal attempts: no suicides occurred in the study.

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Hirsch 1982

Methods	Allocation: Randomly allocated, double blind, placebo controlled trial. Follow up period:12 weeks. N lost to follow up: none for repetition data.
Participants	Setting: London, UK. Inclusion criteria: i) not taking antidepressant or antipsychotic medication; ii) GHQ score of over 20. Numbers: 114 - experimental 76, control 38. Profile: Aged 16 - 65 years, % repeaters, % female, psychiatric diagnoses not given. Source of participants: Patients who were admitted to a hospital after deliberate self-poisoning.
Interventions	Experimental: Antidepressants: either 30-60 mg mianserin or 75-150 mg nomifensine. Control: Placebo. Therapist: n.a. Type of therapy offered: drug therapy. Length of treatment: 6 weeks.

Hirsch 1982 (*Continued*)

Outcomes	Included: i) repetition of self-harm. Excluded: i) GHQ score; ii) depression; iii) life events; iv) compliance with treatment.
Notes	Repetition data from: not specified. Fatal attempts: there were no suicides in this study.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Liberman 1981

Methods	Allocation: 'Assigned randomly' - method not described. Follow up period: 24 months. N lost to follow up: none for repetition data.
Participants	Setting: Los Angeles, USA. Inclusion criteria: i) patients who were not psychotic; ii) not addicted to drugs and alcohol; iii) without organic brain syndrome; iv) at least one previous suicide attempt. Numbers: 24 - 12 experimental, 12 control. Profile: All were repeaters. Mean age 29.7 years. Age range 18-47 years. 67% female. 100% depressive neurosis. Most met criteria for personality disorder. Source of participants: Patients were referred by the psychiatric emergency service or the hospital A & E Dept. following DSH.
Interventions	Experimental: Inpatient treatment with behaviour therapy: social skills training (17 hours); anxiety management (10 hours) and family work (5 hours). Therapeutic milieu with token economy. Aftercare at community mental health centre or with private therapist. Control: Inpatient treatment with insight orientated therapy: individual therapy (17 hours); group therapy and psychodrama (10 hours) and family therapy (5 hours). Therapeutic milieu with token economy. Aftercare at community mental health centre or with private therapist. Therapist: (i) Behaviour therapy: psychologist assisted by 2 bachelor level technicians. (ii) Insight therapy: experienced social workers and psychologists (N not specified). Length of treatment: 10 days - 4 hours of therapy for a period of 8 days. 32 hours in total. Type of therapy offered: see above.
Outcomes	Included: i) repetition of self-harm. Excluded: i) depression; ii) reinforcement; iii) assertiveness; iv) fear.
Notes	Repetition data from: Interview at follow-up at 24 months. Fatal attempts: no suicides mentioned.

Risk of bias

Liberman 1981 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Linehan 1991

Methods	Allocation: Randomized clinical trial (allocation via computer program). Follow up period: 12 months. N lost to follow up: 24 patients were deliberately not included in the follow-up.
Participants	Setting: Seattle, USA. Inclusion criteria: i) female; ii) borderline personality disorder diagnosis; iii) at least two attempts in the last five years - with one in the last 8 weeks; iv) aged 18-45 years; v) agreed to study conditions. Numbers: 63 - 32 experimental, 31 control. Profile:100% female. 100% Borderline personality disorder. All were repeaters (multiple episodes of self-harm)at high risk of repetition. Source of participants: clinically referred patients who had an episode of deliberate self-harm in the last 8 weeks.
Interventions	Experimental: Dialectical behavior therapy (individual and group work) for one year. Telephone access with therapist. Control: Treatment as usual (alternative therapy referrals). Length of treatment: 12 months. Therapist: five psychologists, one clinical psychology graduate, one psychiatrist. Type of therapy offered: Experimental: dialectial behavior therapy. Control: standard aftercare. 73% individual psychotherapy (42.0% maintained in therapy for whole year)
Outcomes	Included: i) repetition of self-harm. Excluded: i) maintenance in therapy; ii) psychiatric in-patient treatment; iii) depression; iv) hopelessness; v) reasons for living; vi) suicide ideation; vii) anger; vii) social adjustment; viii) global functioning.
Notes	Repetition data from: parasuicide history interview - 50% were checked with medical records, therapist records, and observer/nurse/physician ratings. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

McLeavey 1994

Methods	Allocation:Patients were assigned on a random basis to the two treatment groups using an open random number table. Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Cork, Ireland. Inclusion criteria: i) aged 15-45 years; ii) no history of psychosis, mental retardation, or organic cognitive impairment; iii) not requiring psychiatric treatment (day care or inpatient). Numbers: 39; 19 experimental, 20 control. Profile: Mean age 24.4 years. 74% female. 35.6% were repeaters. 23% dysthymia. 15% dependent personality disorder. 13% alcohol abuse. Source of participants: patients admitted to A & E Dept. following self-poisoning.
Interventions	Experimental: Interpersonal problem solving skills training. (D'Zurilla & Godfried , 1971). Control: Brief problem-solving therapy (Hawton & Catalan, 1982). Therapist: Clinical psychologists and registrars in psychiatry. Type of therapy offered: Experimental: Interpersonal Problem Solving Therapy. Control: Problem-solving therapy. Length of treatment: Experimental: mean no. sessions 5.3. Control: mean no. sessions 4.2
Outcomes	Included: i) repetition of self-harm. Excluded: i) depression; ii) problem-solving; iii) self-perception; iv) number of problems.
Notes	Repetition data from: Hospital records and GP questionnaire. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Montgomery 1979

Methods	Allocation: Random allocation in double blind trial. Follow up period: 6 months. N lost to follow up: 7 for repetition data.
Participants	Setting: Maidstone, UK. Inclusion criteria: i) documented history of 2 or more episodes of deliberate self-harm; ii) not suffering from overt depression or schizophrenia; iii) no organic illness. Numbers: 37 - 18 experimental, 19 control. Profile: Patients aged 18 - 68 years (mean 35.3). All were repeaters. 70% female. No information on psychiatric diagnoses. Source of participants: patients admitted to a general hospital following a suicidal act.

Montgomery 1979 (*Continued*)

Interventions	Experimental: 20 mg intramuscular flupenthixol decanoate 4 weekly for 6 months. Control: Placebo. Therapist: n. a. Type of therapy offered: Drug therapy. Length of treatment: 6 months
Outcomes	Included: i) repetition of self-harm. Excluded: none.
Notes	Repetition data from: not specified. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Montgomery 1982

Methods	see Montgomery et al 1979 and 1983.
Participants	
Interventions	
Outcomes	
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Montgomery 1983

Methods	Allocation: Patients randomly allocated to treatment under double blind conditions. Follow up period: 6 months. N lost to follow up: none for repetition data.
Participants	Setting: London, UK. Inclusion criteria: i) multiple previous episodes of deliberate self-harm; ii) diagnosis of personality disorder; iii) not depressed or schizophrenic. Numbers: 58 - Ns in experimental and control groups are only given for those who completed treatment (Ex. - 17, Con. - 21).

Montgomery 1983 (*Continued*)

	Profile: Patients with personality disorders (borderline and histrionic). Mean age 35. 7 years for those who completed treatment. All were multiple repeaters (mean 3.6 attempts). 66% female. Source of participants: Patients who were admitted to a medical ward following deliberate self-harm.
Interventions	Experimental: Mianserin - 30 mg. Control: Placebo. Therapist: n.a. Type of therapy offered: Drug therapy. Length of treatment: six months
Outcomes	Included: i) repetition of self-harm. Excluded: i) depression
Notes	Repetition data from: not specified. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Morgan 1993

Methods	Allocation: Random selection from a supply of closed envelopes, half of which contained a green card. Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Bristol, UK. Inclusion criteria: i) no previous episode of deliberate self-harm; ii) resident within Healthcare Trust catchment area. Numbers: 212 - 101 experimental, 111 control. Profile: Mean age 30 years. % female not given. No information on diagnoses. No repeaters. Source of participants: Patients admitted to hospital following first episode of deliberate self-harm.
Interventions	Experimental: Standard care plus green card (emergency card indicating that a doctor was available and how to contact them). Control: Standard care e.g. referral back to the primary healthcare team, psychiatric inpatient admission. Therapist: telephone contact/face-to-face interviews conducted by doctor on-call. Type of therapy offered: crisis intervention. Length of treatment: 12 months
Outcomes	Included: i) repetition of self-harm. Excluded: none.
Notes	Repetition data from: hospital, psychiatric and GP records. Fatal attempts: there were no suicides in the study.

Morgan 1993 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Salkovskis 1990

Methods	Allocation: Predetermined random allocation (sampling without replacement using envelopes). Follow up period: 12 months. N lost to follow up: none for repetition.
Participants	Setting: Leeds, UK. Inclusion criteria: i) Age 16-65; ii) of fixed abode and living within Health Authority boundary; iii) not requiring immediate psychiatric treatment; iv) non-psychotic; v) no serious organic illness; vi) anti-depressants taken as part of the overdose; vii) two or more previous attempts; viii) Buglass and Horton (1974) Risk of Repetition Scale score of at least 4. (Patients had to fulfill at least two of criteria vi-viii to be included). Numbers: 20 - 12 experimental, 8 control. Profile: Mean age 27.5 years. All were repeaters with a high risk of further repetition. 50% female. No information on diagnoses. Source of participants: patients who were referred by duty psychiatrist following antidepressant self-poisoning and assessed in an A & E Department.
Interventions	Experimental: Domiciliary cognitive-behavioural problem-solving treatment. Control: Treatment as usual (not described). Therapist: one CPN. Length of treatment: five sessions each lasting one hour. Type of therapy offered: problem-solving therapy.
Outcomes	Included: i) repetition of self-harm. Excluded: i) suicide ideation; ii) severity of three main problems; iii) depression; iv) hopelessness.
Notes	Repetition data from: hospital records. Fatal attempts: no suicides mentioned.

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Torhorst 1987

Methods	Allocation: Patients were randomly offered treatments. Follow up period: 12 months. N lost to follow up: 8/141 (5.7%) for repetition data.
Participants	Setting: Munich, Germany. Inclusion criteria: i) non-psychotic. Numbers: 141 - 68 experimental, 73 control. Profile: all self poisoning patients. 48% were repeaters. 63% female. No information on diagnoses. Source of participants: patients hospitalised after a suicide attempt.
Interventions	Experimental: Short crisis intervention during hospital stay, fixed out patient appointment with same therapist as saw in hospital. Motivational interview, letter and assessment of motivation towards therapy. Control: Short crisis intervention during hospital stay, fixed out patient appointment with a different therapist than was seen in hospital. Motivational interview, letter and assessment of motivation towards therapy. Length of treatment: 3 months.
Outcomes	Included: i) repetition of self-harm. Excluded: i) compliance
Notes	Repetition data from: follow up interview at one year after index suicide attempt. Fatal attempts: 3 suicides in experimental group, 2 suicides in control group. In the first phase of this study the efficacy of standard care was assessed in terms of compliance. Patients (N=85) were not randomly assigned to this group.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Torhorst 1988

Methods	Allocation: Randomization to treatment (method not specified). Follow up period: 12 months. N lost to follow up: none for repetition data.
Participants	Setting: Munich, Germany. Inclusion criteria: i) no endogenous psychosis; ii) not already in psychotherapeutic treatment; iii) not in inpatient psychiatric treatment; iv) not illicit-drug overdose; v) able to understand German; vi) living within travelling distance of research centre; vii) previous episodes of deliberate self-harm. Numbers: 80 - experimental 40, control 40. Profile: All patients were repeaters. % female not given. Age not given. Source of participants: patients who had deliberately self-poisoned referred to liaison service of toxicological ward.

Torhorst 1988 (*Continued*)

Interventions	Experimental: Long term therapy - one therapy session per month over a period of 12 months. Control: Short term therapy - 12 weekly therapy sessions over a period of three months. All participants in both groups had brief crisis intervention (3 days) in hospital. Therapist: 3 psychiatric attendants. Type of therapy offered: not specified. Length of treatment: Ex. - 12 months, Con. - 3 months.
Outcomes	Included: i) repetition of self-harm. Excluded: i) compliance; ii) depression; iii) complaints.
Notes	Repetition data from: not specified. Fatal attempts: no suicides mentioned.

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Van der Sande 1997

Methods	Allocation: Selection from series of opaque, sealed envelopes which contained a number from a list of random numbers generated by a computer. Follow up period:12 months. N lost to follow up: none for repetition data.
Participants	Setting: Utrecht, The Netherlands. Inclusion criteria: i) able to understand and write Dutch; ii) living in catchment area of hospital; iii) not psychiatric inpatient; iv) not in prison; v) no drug or alcohol addiction; vi) no recurrent consultations with a liaison psychiatrist during a stay of more than 2 days on a somatic ward. Numbers: 240 - 140 experimental, 134 control. Profile: Over age 15 years. 73% were repeaters. 66% female. 32% mood disorder. 15% adjustment disorder. Source of participants: Patients admitted to hospital following a suicide attempt.
Interventions	Experimental: Brief psychiatric unit admission, encouraging patients to contact unit on discharge. Out patient therapy plus 24-hour emergency access to unit. Control: Usual care: 25% hospitalization, 65% outpatient referral. Therapist: Experimental: 1 psychiatrist, 2 CPNs and 9 psychiatric nurses. Control: not described. Type of therapy offered: problem solving treatment used by CPNs with patients in experimental treatment (Hawton and Catalan, 1982). Control therapy not specified. Length of treatment: not specified.
Outcomes	Included: i) repetition of self-harm. Excluded: i) anxiety; ii) depression; iii) hopelessness; iv) phobic anxiety; v) somatisation; vi) obsession-compulsion; vii) interpersonal sensitivity; viii) hostility; ix) sleep disorder; x) use of clinical services.

Van der Sande 1997 (*Continued*)

Notes	Repetition data from: interview with patient, hospital records. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

van Heeringen 1995

Methods	Allocation: Randomisation using open randomisation list was performed by a data nurse who did not interview patients. Follow up period:12 months N lost to follow up:125/516 (24%) for repetition data.
Participants	Setting: Gent, Belgium. Inclusion criteria: i) resident in catchment area; ii) over 15 years old; iii) not in in-patient medical treatment. Numbers: 516 - 258 experimental, 258 control. Profile: 15% mood disorder. 2.7% anxiety disorder. 30% repeaters. 43% female. Source of participants: Patients treated in A & E Dept. after a suicide attempt.
Interventions	Experimental: Special care - home visits were made to patients who did not keep outpatient appointments, the reasons for not attending appointments were discussed and the patient was encouraged to attend. Control: Outpatient appointments only; non-compliant patients were not visited. Therapist: community nurse did home visit. Type of therapy offered: various offered on discharge e.g. out-patient appointment, GP referral, private psychologist/psychiatrist. Length of treatment: not specified.
Outcomes	Included: i) repetition of self-harm. Excluded: i) compliance.
Notes	Repetition data from: Interview with patient or with relative/GP if patient could not be contacted. Fatal attempts: 6 suicides in experimental group, 7 suicides in control group.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Verkes 1998

Methods	Allocation: Participants were randomly assigned to one of two treatment groups. Follow-up period: 12 months. N lost to follow-up: none for repetition.
Participants	Setting: Leiden and Rotterdam, The Netherlands Inclusion criteria: i) all were repeaters; ii) aged 18 years and over; iii) without current diagnosis of major depression (but 5 patients had a past history of this). Numbers: 91 - 46 experimental, 45 control. Profile: Age range - 18 years and older. Mean age 35.6 years. 100% were repeaters. % female not given. 92% personality disorder, 6.5% dysthymia, 4.4% anxiety disorder, 8.8% dissociative disoder, 44% alcohol abuse, 20.9% adjustment disorder, 25.3% depressive disorder (not specified). 16.5% no psychiatric diagnosis. Source of participants: patients recruited from outpatient departments in A & E wards of University hospitals in Leiden and Rotterdam.
Interventions	Experimental: Paroxetine 40mg/day, plus psychotherapy weekly/fortnightly. Control: Matched placebo, plus psychotherapy weekly/fortnightly. Therapist: (type and n) not described. Type of therapy offered: drugs and psychotherapy. Length of treatment: 12 months.
Outcomes	Included: i) repetition of self harm. Excluded: i) depression; ii) hopelessness; iii) anger; iv) compliance; v) platelet serotonin content; vi) side-effects.
Notes	Repetition data from: not stated. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Waterhouse 1990

Methods	Allocation: Randomisation using sequentially numbered sealed enveloped. Follow up period: 16 weeks. N lost to follow up: none for repetition data.
Participants	Setting: York, UK. Inclusion criteria: i) patients with no immediate medical or psychiatric treatment needs. (ii) over 16 years old. Numbers: 77 - 38 experimental, 39 control. Profile: 36% repeaters. 62% female. Mean age 30.3 years. No information on diagnoses. Source of participants: Patients admitted to an A & E Department for deliberate self-harm.

Waterhouse 1990 (*Continued*)

Interventions	Experimental: General hospital admission - no additional treatment or counselling. Control: Discharge from hospital. On discharge both groups advised to contact their GP if they needed further help. Length of treatment: The median length of admission was 17 hours. Therapist: none. Type of therapy offered: none.
Outcomes	Included: i) repetition of self-harm. Excluded: i) depression, hopelessness and anxiety; ii) suicidal ideation; iii) social isolation; iv) somatic concerns; v) daily routine; vi) suicidal behaviour assessment schedule; vi) GP questionnaire; vii) psychiatric admission; viii) time off work.
Notes	Repetition data from:GP interview, hospital records. Fatal attempts: no suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Welu 1977

Methods	Allocation: Patients were randomly assigned using a table of random numbers. Follow up period: 4 months. N lost to follow up:repetition data not available for one person.
Participants	Setting: Pittsburgh, USA. Inclusion criteria: i) over 16 years old; ii) not a student living in unversity accommodation; iii) not resident in care giving institution or institutionalized at the time of the attempt. Numbers:120 -57 control, 63 experimental. Profile: 60% repeaters. No information on age, sex, or psychiatric diagnoses. Source of participants: Patients admitted to an A & E Department for deliberate self-harm.
Interventions	Experimental: Special outreach programme. Community Mental Health Team (CMHT) contacted patient immediately after discharge. Home visit arranged as soon as possible. Weekly/bi-weekly contact with therapist. Control: Routine treatment program. Psychiatric consultation at request of treating physician. Patients given appointment for evaluation at the CMHT centre next day. Any further contact after discharge was up to the patient to decide. Therapist: 4 nurses, 3 social workers, 2 community workers. Type of therapy offered: several used e.g. psychotherapy, crisis intervention, family counselling, chemo-therapy, etc.). Focus on quantity and continuity of care. Length of treatment: 4 months
Outcomes	Included: i) repetition of self-harm. Excluded: i) extent of follow up coverage; ii) type and frequency of contacts; iii) purposive accidents; iv)

Welu 1977 (*Continued*)

	excessive use of alcohol; v) drug misuse.
Notes	Repetition data from: interview with patient, hospital records, interviews with family and friends. Fatal attempts: No suicides mentioned.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Characteristics of excluded studies *[ordered by study ID]*

Bateson 1989	Non-randomised CCT. In this study 100 deliberate self-harm patients presenting to the casualty department of a general hospital in England were assessed by a psychiatric registrar and a psychiatric social worker (experimental group) or by a psychiatrist alone (control group). Outcome (repetition)at follow-up: Ex. 12/50 (24%) vs. Con. 11/50 (22%)
Catalan 1980	Non-randomized CCT. 120 deliberate self-harm patients presenting to a casualty department in a general hospital in England. Patients in the experimental group were assessed by nurses (all Staff Nurse grade of whom 5 had psychiatric training, 2 were state registered and 1 was state enrolled). Patients in the control group were assessed by doctors (5 psychiatric trainees of registrar grade and 3 GP trainees). The GP trainees and nurses received 5 weeks of training in the assessment procedure and the psychiatrists' training lasted 4 weeks. Outcome (repetition)at follow-up: Ex. 9/75 (12%) vs. Con. 5/45 (11%).
Crawford 1998	Non-randomized CCT - no data on repetition of DSH at follow-up. 252 deliberate self-harm patients presenting to an A & E department in a general hospital in England. Patients in the experimental group were assessed by A & E staff who had received special training (a one hour teaching session) in the assessment of deliberate self-harm patients. Patients in the control group were assessed by members of the same team before they had received the training. Outcome (repetition)at follow-up: repetition was not assessed.
Deykin 1986	Non-randomised CCT. 319 adolescent deliberate self-harm patients presenting to the casualty department of two general hospitals in the USA received either Special Care (Boston City Hospital) involving a direct (outreach) social worker plus an educational program, or Standard Aftercare (Brockton Hospital). Outcome (repetition)at follow-up: Ex. 14/172 (8%) vs. Con. 7/147 (5%)
Donaldson 1997	Non-randomised CCT. 23 adolescent deliberate self-harm patients presenting to the casualty department of a general hospital in the USA received an experimental outreach intervention. The patient and member of his/her family were encouraged to attend four outpatient therapy sessions and were also telephoned at 1, 2 and 6 weeks. The control group was 78 adolescents who had participated in a three month follow-up at the same hospital

(*Continued*)

	several years earlier. Outcome (repetition)at follow-up: Ex. 0/23 (0%) vs. Con. 7/78 (9%)
Gardner 1977	Original randomization was disrupted in some subjects which affects the analysis of the dependent variable used in this review (i.e. repetition of DSH). In this study 276 deliberate self-poisoning patients presenting to a general hospital in England were randomized to be assessed by a medical team (experimental group) or a psychiatrist (control group). Included patients who re-presented with DSH were re-randomized, as the main outcome in this trial was the treatment recommended for each DSH case. Because of this randomization was disrupted for these patients in terms of repetition data.
Patsiokas 1995	RCT - no data on repetition of deliberate self-harm during follow-up. 15 deliberate self-harm patients were recruited from psychiatric inpatient wards of a University Hospital in the USA. After randomization patients received either Cognitive Restructuring Therapy, Problem Solving Therapy or Non-directive Control Treatment Outcome (repetition)at follow-up: not available.
Rotherham-Borus 1996	Non-randomised CCT - no data on repetition of deliberate self-harm during follow-up. In this study 140 Latina (female) adolescent deliberate self-harm patients presenting to a Emergency Room (ER) in a general hospital in the USA. Patients in the experimental group received a specialized ER programme where staff had undergone special training in care for DSH patients, an educational video was viewed by patients and their families, a family therapist was on call and an initial therapy session was provided. Patients in the control group received standard ER care. After discharge all patients were referred to a specialist centre for six sessions of outpatient family therapy. Outcome (repetition)at follow-up: not available.
Termansen 1975	Non-randomised CCT. 202 deliberate self-harm presenting to an ER in a general hospital in Canada. Patients were allocated to one of four treatment groups: 1. ER assessment and follow-up (for three months) by the same mental health professional. 2. ER assessment by a mental health professional, plus follow-up (for three months) by a crisis centre volunteer with reassessment by the volunteer and mental health worker at three months. 3. ER assessment by a mental health professional, but no follow-up. Reassessment at three months by the same mental health professional. 4. No ER assessment (identified by medical records). Assessment at three months by mental health professional. Outcome (repetition)at follow-up: Group 1: 1/45 (2%) Group 2: 2/33 (6%) Group 3: 7/25 (28%) Group 4: 2/16 (13%)
Wullimier 1979	Non-randomised CCT. In this study 288 deliberate self-harm patients presenting to a general hospital in Switzerland. Patients in the experimental group were 'Systematically treated with classical therapeutic interventions' (e.g. supportive psychotherapy, psychiatric hospitalization, crisis intervention etc), and were contacted at several points during the 2 years after the attempt (a few days after discharge, 1 month, 2 months, 6 months, 1 year and 2 years). Patients in the historical control group received standard aftercare which involved the same therapeutic interventions, but were were only contacted for follow-up 2 years after their attempt, without

(*Continued*)

	having been told that contact would be made. Outcome (repetition)at follow-up: Ex. 27/145 (19%) vs. Con. 15/143 (11%)

DATA AND ANALYSES

Comparison 1. Problem solving therapy vs Standard aftercare

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	5	571	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.71 [0.45, 1.11]

Comparison 2. Intensive intervention plus outreach vs. Standard aftercare

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	6	1161	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.84 [0.62, 1.15]

Comparison 3. Emegency card vs. Standard aftercare

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	2	317	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.48 [0.22, 1.05]

Comparison 4. Dialectical behavior therapy vs. Standard aftercare

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	39	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.26 [0.08, 0.92]

Comparison 5. Inpatient behavior therapy vs Inpatient insight-orientated therapy

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	24	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.62 [0.09, 4.24]

Comparison 6. Same therapist vs. Different therapist

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	141	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.32 [1.18, 9.38]

Comparison 7. General hospital admission vs. Discharge

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	77	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.75 [0.16, 3.53]

Comparison 8. Flupenthixol vs. Placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	30	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.03, 0.52]

Comparison 9. Antidepressants vs. Placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	3	243	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.83 [0.47, 1.48]

Comparison 10. Long-term therapy vs. Short-term therapy

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	80	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.0 [0.35, 2.84]

Comparison 11. Homebased family therapy vs. Standard aftercare

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Repetition	1	149	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.02 [0.41, 2.50]

WHAT'S NEW

Last assessed as up-to-date: 29 July 1999.

5 November 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 1, 1997

Review first published: Issue 3, 1999

30 July 1999	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

KH initiated the study and together with ET and EA designed the original protocol, coordinated the study, and analyzed the data. ET and EA conducted the electronic searching and the data abstraction. All the authors contributed to revision of the protocol, hand searching of journals, and the writing of the paper, which was initially drafted by KH and ET. EF, PH, DG, AH, KvH and IS carried out the quality assessments. KH is guarantor for the review.

DECLARATIONS OF INTEREST

None

SOURCES OF SUPPORT

Internal sources

- University Department of Psychiatry, Warneford Hospital, Oxford., UK.

External sources

- NHS Executive Anglia and Oxford Research and Development Program, UK.

NOTES

This review is in the process of being updated. We hope to publish the updated version in Issue 2, 2008.

INDEX TERMS

Medical Subject Headings (MeSH)

Cognitive Therapy; Self-Injurious Behavior [drug therapy; *therapy]; Social Support

MeSH check words

Humans