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Crisis telephone consultation for deliberate self-harm patients: effects on repetition

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Background No interventions have been shown to be effective in reducing deliberate self-harm (DSH) repetition in this group of patients as a whole.

Aims To investigate the effect on repetition of offering emergency telephone support in a group of hospital-admitted DSH patients.

Method A total of 827 DSH patients admitted to medical wards were randomly allocated to either control or intervention (green card) groups. In addition to treatment as usual, the intervention group was offered telephone support should any further crises occur. The main outcome measure was DSH repetition within six months of the index event.

Results The intervention had no significant effect on the overall DSH repetition rate (odds ratio 1.20, 95% CI 0.82–1.75). Sub-group analysis suggested that response to the intervention differed according to the past history of DSH – subjects with a previous history repeating more often and first-timers appearing to benefit.

Conclusions No overall effect of the intervention was shown. Conclusions concerning sub-groups must be regarded as speculative, but they suggest that further assessment of the value of telephone support in first-timer DSH patients is indicated.

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Deliberate self-harm (DSH, also called attempted suicide) is one of the most common reasons for acute admission to hospital in England and Wales (Hawton *et al*, 1997). Despite this, attempts at prevention have on the whole been unsuccessful, with intervention trials lacking power to detect clinically important effects (see Hawton *et al*, 1998, for a recent review). The present study aims to evaluate, using a randomised controlled design, the effectiveness of offering a crisis telephone consultation service to hospital-admitted DSH patients in the event of further problems arising following their discharge. The technique has been described in an earlier, smaller study (Morgan *et al*, 1993), which was based solely on patients who had no previous history of DSH ('first-timers'). The findings regarding DSH repetition are presented here. A separate paper describes the way in which the telephone support system worked in practice (further details available from M.O.E. upon request).

METHOD

Inclusion criteria and recruitment

All adult in-patients admitted following DSH to two of the three general hospitals in Bristol between 1 November 1994 and 31 July 1996, and who were referred for routine psychiatric evaluation, were assessed for eligibility. Patients from the remaining hospital were recruited from 1 October 1995.

The following patients were excluded: (a) patients who normally resided outside the catchment areas of the psychiatric teams serving the three hospitals, and (b) patients who met specific clinical criteria which meant that they were unlikely to use the intervention appropriately, placing either themselves or others at increased risk. The clinical criteria excluded three main categories of patients: (i) those making multiple contacts (three or more in the preceding six months) yet failing to engage with psychiatric services; (ii) those presenting an unacceptable type or degree of aggressive behaviour (either at the time or in the previous six months); (iii) those patients inappropriately using alcohol or drugs, leading to repetitive presentation in an intoxicated state such that they became aggressive or were unable to engage in treatment.

The following information was collected on all subjects at baseline interview by the assessor (who was usually a doctor): (a) socio-demographic data (age, gender, social class, employment status); (b) clinical diagnosis; (c) a risk-assessment schedule (Kreitman & Foster, 1991); (d) subsequent management following DSH; (e) the likely untreated outcome of this episode (rated as 'fatal', 'critical' or 'other'); (f) whether there were attempts made to 'ensure' or 'avoid' discovery following the index act; (g) how patients viewed their current problems (rated as 'resolving', 'staying the same' or 'getting worse'); and (h) the assessor's rating of the degree of rapport established with the patient, categorised as 'good', 'moderate' or 'poor'.

Randomisation

After baseline details were collected, patients were randomised on a one-to-one basis into intervention and control groups using the sealed envelope technique, ensuring that it was impossible to tell from feeling or looking at the envelopes whether they contained a green card or a 'dummy card' (which was not given out). Those randomised to receive a green card were offered the card immediately after the psychiatric assessment. This meant that baseline data were collected and treatment plans completed before randomisation, and that all subjects received treatment as usual. During the study, intervention group subjects were able to consent to receiving a green card (only one patient refusing this offer); in case of loss a new card was sent to the patient's general practitioner.

The green card

The green card offered 24-hour crisis telephone consultation with an on-call psychiatrist for a six-month period after the index DSH episode, provided that the patient had not already self-harmed at the time of contact. It gave the telephone number of the appropriate hospital switchboard. On receiving a call, the telephonist

contacted the duty trainee psychiatrist, who would then return the call. The card emphasised the importance of seeking help if appropriate through the usual urgent channels should the doctor be unable to return the call. Unlike the earlier study (Morgan *et al*, 1993), no direct offer of face-to-face consultation or admission to hospital was made explicitly on the green card, which confined its offer of help to telephone contact in the first instance.

Outcome measures

All subjects' repeat hospital attendances for DSH within six months of randomisation were monitored (blind to their study group) by means of a computerised case register based on routine accident and emergency and admission data for each of the three general hospitals in Bristol (other accident and emergency departments were at least 13 miles away). Validation of this register indicates that it identifies 94% of hospital-attending overdose patients, compared to 54% of those who self-lacerate. The criteria for inclusion into the study (hospital admission following DSH) differed from the outcome measure (all presentations to hospital following DSH regardless of whether they resulted in admission).

Data concerning suicide and accidental deaths of study subjects were obtained from the local coroner's office and from mortality statistics collected by Avon Health Authority.

Statistical analysis

Sample size calculations were based on the 54% reduction in repeat DSH shown in the earlier, smaller study (Morgan *et al*, 1993). On the basis of the expectation that its findings would be applicable to all DSH patients and not merely first-timers, a sample size of 700 was required to detect this reduction with 80% power and a two-sided 5% significance level. Existing in-patient admission rates indicated a trial recruitment period of 21 months.

Main analyses

All analyses were conducted on an intention-to-treat basis. The effects on DSH repetition of provision of a green card were measured in terms of the odds ratio comparing the odds of repeat DSH in those randomised to the intervention arm of the trial with the odds of repetition in the control arm. The significance of the difference between the groups was determined using the χ^2 statistic. Differences in time to first repeat were tested using the log rank test.

Sub-group analyses

In the light of the findings from the earlier study, we were interested in determining whether the effect of the intervention differed in those with and without a past history of DSH. We also investigated whether men and women responded differently. The size of the study was, however, insufficient to detect small but nevertheless potentially important differences. In order to investigate whether the effects of the green card differed in these groups, the statistical significance of an interaction term between treatment group and each of these two variables was determined in logistic regression models using the likelihood ratio statistic. No other sub-group analyses were undertaken.

RESULTS

Recruitment

Over the recruitment period a total of 1301 patients living within the catchment area were admitted following DSH to the three hospitals (Fig. 1). Of these, 911 (70%) were seen on the ward for psychosocial assessment. Fifty-seven patients (6% of all those assessed) were excluded for the clinical reasons detailed above, and a further 26 patients (3%) were excluded because the assessing doctor believed, in error, that they had already been included in the study.

The 827 patients recruited to the trial represent 64% of all patients admitted to the relevant medical wards following DSH during the study period and 91% of such patients who were assessed by the regular mental health professional.

Baseline characteristics

Table 1 compares the baseline characteristics of those randomised to the two arms

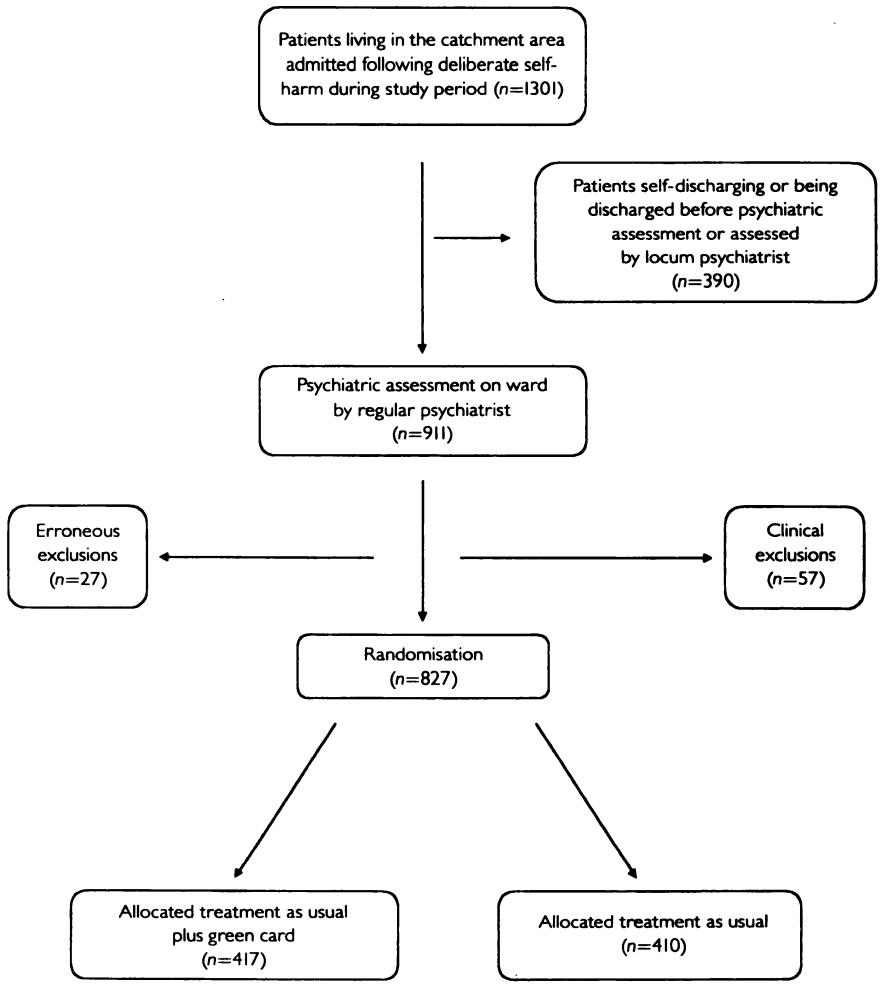

Fig. 1 Recruitment to study groups.

Table 1 Comparison of study groups on non-experimental variables

Variable[1]	Green card group (n=417)		Control group (n=410)	
	Value	%	Value	%
Average age	32.9 years s.d.=12.9		33.8 years s.d.=13.1	
Gender (male)	175	42.0	194	47.3
Previous DSH	194	46.7	200	49.3
Social class (V)	144	35.2	131	33.0
Unemployed	168	40.6	170	42.4
K & F scores (high)[2]	40	10.5	37	9.0
Alcohol problems	115	27.8	121	30.0
Discovery (avoidance)	31	7.5	27	6.7
Diagnosis (any psychiatric disorder)	356	87.0	351	87.1
Disposal (to specialist mental health services)	203	48.7	202	49.3
Problem resolution (worse)	31	7.5	33	8.1
Rapport (poor)	16	3.9	14	3.4
Untreated consequences (fatal or critical)	191	46.2	183	45.3
Method of DSH (overdose)	404	97.3	404	99.0

1. More than 90% complete data available on all variables. The percentages shown in this table allow for missing data.
2. Refers to 'high category' scores on Kreitman & Foster (1991) scale.

of the trial. These characteristics were similar in the two groups, although there were slightly more males in the control group.

Main analyses

Of subjects in the intervention group, 16.8% repeated DSH, compared with 14.4% of controls (odds ratio 1.20, 95% CI 0.82–1.75). Analysis of repeat DSH by episodes (rather than persons) reveals a similar picture of a non-significant increase in repeat episodes among green card subjects (Table 2).

The median time to first repeat among those given a green card was 33 days (range 1–180); in the control group it was 40 days (range 2–156). This difference is not significant (log rank test χ^2=0.82, P=0.36).

Sub-group analyses

There was no significant interaction between gender and treatment in their effects on DSH repetition (χ^2=2.20, d.f.=1, P=0.14). However, there was a significant interaction between past history of self-harm and treatment on DSH repetition (χ^2=6.77, d.f.=1, P=0.009). Among those subjects who had previously self-harmed, the odds of repeating DSH were higher in the treatment group (OR 1.85, 95% CI 1.14–3.03), while the green card appeared to exert a (non-significant) protective effect on those who had not previously self-harmed (Table 3). Table 4 shows the sub-group comparison using episodes as the outcome measure.

Suicide and accidental deaths

During the six-month follow-up period, two deaths (both with inquest verdicts of suicide) occurred in the green card group. Three deaths (one having an inquest verdict of suicide, one of misadventure and one of accidental death) occurred in the control group. Neither of the suicides from the green card group had made use of the green card at any time to seek help.

DISCUSSION

Limitations of the study and representativeness of the sample population

Routine health service information systems were used to determine the proportion of patients who repeated DSH in the six-month follow-up period. Such methods will underestimate repetition on three counts. First, subjects who migrate out of the study and/or who are admitted to hospitals other than the three study hospitals will not have repeat episodes detected. The fact that Bristol is a discrete urban area means that in practice this is likely to occur infrequently. Secondly, repeat acts of DSH not presenting to hospital but either managed by the general practitioner or by the patient alone without the help of secondary care services might not be identified. Thirdly, those patients repeating DSH by self-laceration (approximately 10% of all episodes) are less reliably detected. We have no reason to suspect that the above omissions will be distributed unevenly between the two arms of the trial.

The findings in this paper refer specifically to patients who were admitted to medical wards, hence the relatively large percentage of subjects with previous experience of DSH (48%) and the high rates of repeat DSH (16% in six months). Using routinely available data, we estimate that over the study period approximately 70% of DSH patients attending accident and emergency departments in Bristol were admitted to hospital (further details available

Table 2 Analysis of repeat deliberate self-harm (episodes) for all cases

Group	Number of repeats			Statistical analysis
	0	1	⩾2	
Green card	347	46	24	χ^2=2.65, d.f.=2
Control	351	32	27	P=0.27

Table 3 Analysis of repeat deliberate self-harm (persons) by previous history

Group	Repeat	No. repeats	Odds ratio	95% CI
First-timers				
Green card	18	203	0.64	0.34–1.22
Control	25	181		
Previous DSH				
Green card	52	142	1.85	1.14–3.03
Control	33	167		

Table 4 Analysis of repeat deliberate self-harm (episodes) by previous history

Group	Number of repeats			Statistical analysis
	0	1	⩾2	
First-timers				
Green card	203	13	5	χ^2=2.18, d.f.=2
Control	181	16	9	P=0.34
Previous DSH				
Green card	142	33	19	χ^2=8.71, d.f.=2
Control	167	15	18	P=0.013

from D.J.G. upon request). As the proportion of patients admitted to hospital following DSH varies markedly around the country (Kapur *et al*, 1998) the present study findings may be less generalisable to those areas where admission rate are considerably different from the ones reported here. Although it may have been possible to broaden our trial to include all patients attending accident and emergency departments, such inclusion would have caused a number of practical difficulties, primarily because many of these patients are not assessed by mental health care professionals. In the trial, of those who were eligible for inclusion and who were assessed by a permanent member of local psychiatric staff, over 90% were randomised.

Main findings

The present study was sufficiently powered to detect a reduction in DSH repetition similar to that seen in the earlier study (Morgan *et al*, 1993), and our results show that, overall, such a reduction was not achieved by the green card intervention.

There are several possible reasons for the discrepancy between these findings and those of the earlier study. The earlier study only included subjects self-harming for the first time, while the present study drew from a mixed group incorporating both patients with a previous history of DSH and first-timers. We found that subjects with previous experience of DSH were more likely to be unemployed, to be from social class V and to have alcohol problems (see Table 5). They were also more likely to receive a diagnosis of psychiatric disorder and a disposal to specialist mental health services, and so can be seen as a more vulnerable group who may be less likely to respond positively to an emergency card.

Another difference was that the current green card did not offer overnight admission to a psychiatric hospital; this may have reduced its potential efficacy. The fact that only one person took up this offer in the earlier study makes this argument less likely; however, it is not negated since an offer of support that is not taken up may in itself be therapeutic.

Of course, it cannot be ruled out that the finding from the earlier study was due to chance alone – and indeed the reduction

CLINICAL IMPLICATIONS

- Provision of a card offering emergency telephone support to patients following hospital medical in-patient admission because of deliberate self-harm (DSH) does not appear to influence overall repetition rates.
- Sub-group analyses of treatment effect in those with and without a past history of DSH suggest that these groups respond in different ways to the intervention.
- Sufficiently powered trials are required to investigate further whether an intervention such as the one described in this paper is beneficial for first-time self-harmers.

LIMITATIONS

- The trial was not designed to analyse repetition in sub-groups, and conclusions concerning them must be viewed with caution.
- The detection of DSH repetition by self-laceration was less reliable.
- The findings were confined to DSH patients who were admitted overnight to hospital and cannot be generalised to the DSH problem as a whole.

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Table 5 Comparison of first-timers with subjects who have a previous history of deliberate self-harm on non-experimental variables

Variable[1]	First-timers (*n*=427)		Previous DSH (*n*=394)		Statistical analysis
	Value	%	Value	%	
Average age	32.7 years s.d.=13.5		34.0 years s.d.=12.4		t=1.41
Gender (male)	198	46.4	169	42.9	χ^2=0.87, d.f.=1
Social class (V)	122	29.2	152	39.3	χ^2=8.67, d.f.=1[2]
Unemployed	153	36.1	185	47.4	χ^2=10.31, d.f.=1[2]
Alcohol problems	109	25.6	127	32.5	χ^2=4.39, d.f.=1
Discovery (avoidance)	27	6.3	30	7.6	χ^2=0.37, d.f.=1
Diagnosis (any psychiatric disorder)	345	82.5	356	91.8	χ^2=14.28, d.f.=1[2]
Disposal (to specialist mental health services)	178	42.1	226	57.8	χ^2=19.46, d.f.=1[2]
Problem resolution (worse)	26	6.1	38	9.8	χ^2=3.33=d.f.=1
Rapport (poor)	10	2.3	20	5.1	χ^2=3.70, d.f.=1
Untreated consequences (fatal or critical)	49	11.5	41	10.4	χ^2=0.02, d.f.=1

1. More than 90% complete data available on all variables. The percentages shown in this table allow for missing data.
2. Significant results after using Bonferroni correction for multiple comparisons.

in DSH repetition seen did not reach conventional levels of statistical significance without the inclusion of serious threats in addition to actual repeat episodes of DSH (Morgan *et al*, 1993).

Sub-group findings

The purpose of this study was to determine the effects of the green card on repetition among a broadly representative group of admitted DSH patients. However, in view of the findings from the earlier study (based solely on first-timers), we were interested in investigating whether there were any differences in treatment effect between the groups depending on their previous history of DSH. Such a difference was suggested by the positive test of statistical interaction between past history and treatment on patient outcome. The reduction in DSH repetition of 36% seen among first-timers is in keeping with the 54% reduction found in the earlier, smaller study, and these findings require further investigation.

In subjects with a previous history of DSH, there was an 85% *increase* in repetition among those in the intervention group. Similar paradoxical increases in repetition among broad groups of treated subjects have been noted by other researchers in this field (Möller, 1989; Allard *et al*, 1992; van der Sande *et al*, 1997); these increases require further analysis in the light of these findings.

Future research

More research is needed to clarify the findings presented here. A sufficiently powered trial is required to evaluate further a possible positive effect of the green card on first-timers. Similarly, possible adverse effects of interventions offered to those with a past history of self-harm require elucidation.

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