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Title: Factors associated with self-cutting as a method of self-harm: Findings from the Irish National Registry of Deliberate Self-Harm

Authors: Ella Arensman, Celine Larkin, Paul Corcoran, Udo Reulbach, Ivan J Perry

ABSTRACT

Background: Research indicates that patients presenting to hospital with self-cutting differ from those with intentional overdose in demographic and clinical characteristics. However, large-scale national studies comparing self-cutting patients to those using other self-harm methods are lacking.

Aims: To compare hospital presentations of self-cutting only, self-cutting plus intentional overdose, and overdose only on demographic and clinical characteristics.

Method: Between 2003 and 2010, the Irish National Registry of Deliberate Self harm recorded 42,585 self-harm presentations to Irish hospital emergency departments meeting the study inclusion criteria. Data were obtained on demographic and clinical characteristics by data registration officers operating independently from the hospitals.

Results: Self-cutting only was significantly more common in males than females, with an overrepresentation of males aged < 45 years. Independent of gender, self-cutting as sole method was significantly associated with no fixed abode, residing in inpatient setting, city residence, absence of alcohol, out of hours and weekend presentation, and repetition risk within 12 months after the index episode. In females those aged < 55 years were overrepresented among self-cutting only presentations.

Conclusion: The demographic and clinical differences between self harm patients underline the presence of different subgroups with implications for service provision and prevention of repeated self harm.

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Self-harm poses a significant health problem. In addition to the high human and financial burden of self-harm itself (1), individuals who engage in self-harm are at increased risk of repetition of self-harm (2-4), suicide (4-6) and all-cause mortality (7). Much of the practice policy around self-harming behaviour classifies diverse methods under the rubric of "self-harm". It is unclear whether this blanket approach to self-harm patients is appropriate or whether the characteristics and needs of self-harm patients differ by self-harm method used. In Ireland (8), as in the UK (9), Europe (10) and the US (11), self-cutting is the second most common method of hospital-treated self-harm, with the most common method being intentional overdose. There is emerging evidence of significant differences between those who engage in self-cutting and those who engage in intentional overdose. Although community studies have identified self-cutting as the most common method of self-harm (12-14), intentional overdose is the most common self-harm method in hospital presentations (9, 10, 15, 16), suggesting that self-cutting episodes are less likely to result in hospital presentation. There are also gender differences between self-cutting and overdose, with female patients tend to form a majority within intentional overdose presentations but self-cutting presentations display a more even gender distribution (17-21). In addition, patients presenting with self-cutting are more likely to have a history of repeated self-harm (18, 20). Lilley et al. (20) also showed that individuals presenting with self-cutting were at higher risk of prospective repetition than those with presenting with intentional overdose or those using more than one method of self-harm and yet they were less likely to be admitted to hospital or to receive a psychosocial assessment. Kapur et al. (22) also found evidence for a decreased likelihood of self-cutting patients receiving a psychosocial assessment following presentation to hospital compared to those using other self harm, methods. This is a matter of concern since long-term follow-up studies report a significantly increased risk of suicide among patients presenting to hospital due to self-cutting(5, 23). Research involving psychiatric patients indicates that self-cutting is prevalent among those diagnosed with Borderline Personality Disorder (BPD) (24) and eating disorder (25) and appears to be primarily associated with affect dysregulation and impulsivity. However, these studies mostly include women and have not compared patients who engage in self-cutting only to those using other self-harm methods.

The current study used data from the National Registry of Deliberate Self-Harm Ireland to investigate differences in demographic and clinical characteristics of patients presenting to emergency departments self-harm based on whether they presented with self-cutting only, self-cutting plus intentional overdose, or intentional overdose only.

METHOD

Design and setting

The National Registry of Deliberate Self-Harm Ireland is a hospital based monitoring system for deliberate self-harm operated by the National Suicide Research Foundation (NSRF) on an ongoing basis. The number of hospitals that contributed full calendar year data to the Registry increased from 37 hospitals for 2003 to 38 for 2004-2005 and all 40 hospitals for 2006-2010. All data are collected by Data Registration Officers (DROs), who operate independently of the hospitals and work according to standard operating procedures which take into account patient confidentiality. The Registry's standardised methodology is described in detail in its Annual Report (8). DROs visit emergency departments and review case notes to identify cases of self-harm through the standardised application of the case definition and inclusion/exclusion criteria. The details of these presentations are recorded on laptop computers and are sent to a centralised database. DROs work closely with the Registry directors to ensure the "caseness" of recorded episodes. Audits incorporating crosschecks among DROs showed high levels of agreement on case ascertainment with kappa statistics exceeding 0.9. The Registry has been an ongoing system since 2003 and therefore allows for prospective follow-up.

Study population

The National Registry of Deliberate Self-Harm Ireland uses the following definition of self-harm: 'an act with non-fatal outcome in which an individual deliberately initiates a non-habitual behaviour, that without intervention from others will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realising changes that the person desires via the actual or expected physical consequences'(8). The definition includes acts involving varying levels of suicidal intent and various underlying motives such as loss of control, cry for help or self-punishment. It includes any method of self-harm where it is clear that harm was intentionally self-inflicted, regardless of the level of suicidal intent, but excludes cases where an individual dies in the emergency department. Alcohol is considered a method of self-harm when it was used deemed to have been used as a means to intentionally inflict physical harm. Accidental overdoses e.g., an individual who ingests excess medication without any intention to self-harm, are excluded. Also excluded

are self-inflicted injuries that clinicians note as occurring as a result of stereotypic movement associated with developmental disorder or cognitive disability.

For the purpose of the current study, presentations from the Registry were included if they were (a) the first presentation by an individual in the study period, (b) involved self-cutting as the sole method, combined self-cutting and intentional overdose of medication in the same presentation, or intentional overdose of medication as the sole method, and (c) occurred between 1st January 2003 and 31st December 2009 to allow 12 months follow-up.

Variables

DROs use a standardised approach to extract information from case notes on the following variables: encrypted patient initials, gender, date of birth, area of residence, living circumstances (private dwelling, prison, no fixed abode/shelter, inpatient setting of any kind, other), date and hour of attendance, method(s) of self-harm (ICD-10 codes), drugs taken, whether alcohol is consumed (yes/no/missing), and recommended next care. Data on repetition are obtained by identifying patients whose gender, encrypted initials and date of birth are identical.

Ethical approval

Ethical approval has been granted by the National Research Ethics Committee of the Faculty of Public Health Medicine. The Registry has also received ethical approval from the relevant hospitals and Health Service Executive Committees. The National Suicide Research Foundation is registered with the Data Protection Agency and complies with the Irish Data Protection Act of 1988.

Statistical analyses

First self-harm presentations during the study period were selected on the basis of whether they involved self-cutting only, self-cutting plus intentional overdose, or intentional overdose only. Prospective repetition was operationalised as three levels: the presence of another presentation of self-harm (regardless of the self-harm method used) within 30 days of the index presentation, between 31 days and 12 months after the index presentation, or no repetition within 12 months of the index presentation. Pearson chi squared tests were used to compare proportions across these groups in relation to another categorical variable. When χ^2 tests revealed a significant association, Cramer's V was calculated as a measure of the strength of association among

categorical/ordinal variables which adjusts for a large sample size (26). Its value usually falls between 0 and 1 and is interpreted much in the same way as a correlation coefficient, indicating a very weak association if < 0.1, a weak association if < 0.3, a moderate association if < 0.5 and a strong association if 0.5+.Univariate odds ratios and corresponding 95% confidence intervals were also calculated.

Multinomial regression analysis was used to identify factors associated with "self-cutting only" and "self-cutting plus intentional overdose" using the "intentional overdose only" group of presentations as the reference category. Independent categorical variables were gender, age group (reference group: 55+ years), city residence (reference group: non-city residence), living circumstances (reference group: private household), involvement of alcohol (reference group: none), presentation between 9am and 5pm (reference group: presenting outside 9am to 5pm), presentation on a weekend day (reference group: presenting on a weekday), and occurrence of a subsequent self-harm presentation within one year (reference group: none). A series of multinomial regression analyses were run to assess whether the effect of each independent variable was modified by gender. Effect modification was determined for 5 of the 7 independent variables. Consequently, separate multivariate models were estimated for each gender. The significance level α was set at 0.05. All statistical tests were two-sided.

RESULTS

The sample

Between 2003 and 2010, 87,085 self-harm presentations to emergency departments in the Republic of Ireland were recorded by the Registry, involving 55,228 individuals. The number of persons whose first episode occurred between 2003 and 2009 (to allow for a one-year follow-up period for each index episode) was 48,206, of whom 26,653 (55.3%) persons were female. Of the 48,206 first self-harm episodes occurring between 2003 and 2009, 42,585 episodes involved either self-self-cutting only (n=6,398), overdose only (34,445), or a combination of self-cutting and overdose (n=1,742), of which episodes by females comprised 24,775 (58.2%) episodes.

Demographic characteristics

Table 1 compares the demographic characteristics of presentations of self-cutting only, presentations of self-cutting plus overdose, and presentations of overdose only.

Gender was significantly associated with method of self-harm (χ^2=1033.9, p<0.001; Cramer's V=0.16), with 21.4% of male first presentations involving self-cutting only compared with 10.4% of female first presentations (OR=2.39, 95%CI 2.26-2.52). Similarly, males were over-represented among presentations of self-cutting plus overdose (4.5% vs. 3.8%; OR=1.39, 95%CI 1.26-1.53). Age was significantly associated with method of self-harm in both males (χ^2=303.3, p<0.001; Cramer's V=0.09) and females (χ^2=283.1, p<0.001; Cramer's V=0.08). Area of residence was also significantly associated with method of self-harm in males (χ^2=80.9, p<0.001; Cramer's V=0.07) and females (χ^2=131.0, p<0.001; Cramer's V=0.07), with presentations involving self-cutting, alone and in combination with overdose, overrepresented among presentations by patients living in cities. Living circumstances were significantly associated with method of self-harm, with patients of no fixed abode/shelter, prisoners, and inpatients over-represented among self-cutting presentations in both males (χ^2=218.9, p<0.001; Cramer's V=0.08) and females (χ^2=128.1, p<0.001; Cramer's V=0.05).

[Insert Table 1 here]

Clinical characteristics

Table 1 shows that method of self-harm was significantly associated with having consumed alcohol at the time of presentation in both males (χ2=342.9, p<0.001; Cramer's V=0.14) and females (χ2=139.6, p<0.001; Cramer's V=0.08). Absence of alcohol involvement was associated with self-cutting only, whereas presence of alcohol was associated with intentional overdose, in both males and females. For those engaging in self-cutting and overdose combined no significant difference was found in terms of alcohol involvement. Hour of presentation was significantly associated with method of self-harm, with self-cutting only presentations less likely to occur between 9am and 5pm in both males (χ2=18.7, p<0.001; Cramer's V=0.03) and females (χ2=8.4, p=0.01; Cramer's V=0.02). Similarly, presenting at the weekend was associated with method of self-harm in males (χ2=32.1, p<0.001; Cramer's V=0.04) and females (χ2=8.5, p=0.01; Cramer's V=0.02).

Repetition

Repetition in the 12 months after an index episode was significantly associated with method of self-harm, with those presenting with self-cutting only significantly more likely to repeat

particularly within 30 days (males: OR=1.43, 95%CI: 1.23-1.67; females: OR=2.23, 95%CI: 1.88-2.64) and also within between 31 days and one year (males: OR=1.16, 95%CI: 1.04-1.31; females: OR=1.52, 95%CI: 1.35-1.72). There was a more marked association in females ($\chi2$=154.9, p<0.001; Cramer's V=0.06) than males ($\chi2$=32.2, p<0.001; Cramer's V=0.03).

Factors independently associated with method of self-harm

Multinomial logistic regression analyses were conducted to identify factors independently associated with method of self-harm in males and females (Table 2). Significant effect modification was identified for age group, type of residence, city residence, presenting at the weekend and repetition.

Among both males and females, factors independently associated with "self-cutting only" presentations (compared with "intentional overdose only" presentations) were: being a city resident; being of no fixed abode, residing in an inpatient setting or other health, social and custodial institutions; presenting outside 9am to 5pm; presenting at the weekend; no alcohol involvement; repeating within 12 months after the index episode. In terms of significant gender differences, among males those aged < 45 years and among females those aged < 55 years were overrepresented among patients presenting with self-cutting only.

Being aged less than 35 years, being a city resident, presenting at the weekend, and repeating within 30 days of the index episode were independently associated with males who engaged in self-cutting and overdose combined. Among females who used these two methods independent associations were found for being aged less than 45 years, being a city resident, alcohol involvement and repeating within 12 months after the index presentation.

[Insert Table 2 here]

DISCUSSION

Using national data on hospital presentations, this study compared the characteristics of self-harm presentations involving self-cutting only, presentations of self-cutting and intentional overdose combined, and presentations of intentional overdose only, and identified factors independently associated with method of self-harm. We found that presentations of self-cutting

only and presentations of intentional overdose only differed significantly on each of the examined variables, whereas "self-cutting plus overdose" presentations share some similarities with "self-cutting only" presentations and some similarities with "intentional overdose only" Male and female presentations were largely similar within "self-cutting only" presentations, but varied on a number of factors within the group "self-cutting plus overdose".

Overall, the results suggest that patients presenting with self-cutting as the sole method of self-harm are not identical to the majority subgroup of self-harm patients (i.e. those presenting with intentional overdose only), forming a group with an over-representation of males, younger people, city residents, individuals residing in health, social and custodial institutions, and high risk of repetition. "Self-cutting only" was overrepresented among out-of-hours presentations and was less likely to involve alcohol consumption. The service implications of such differences are compounded by the fact that the medical management of self-cutting will differ markedly from that adopted for intentional overdose, being concerned with wound closure rather than toxicology. It is likely that patients presenting with self-cutting may require less medical observation and may be in a position to receive a psychosocial assessment sooner after presentation than overdose patients. This lower medical complexity must be considered alongside the increased risk of repetition among patients presenting with self-cutting only and the potential need for more intense psychosocial intervention, particularly in the few weeks after the index episode. The need to provide a psychosocial assessment to patients engaging in self-cutting as a matter of routine is also supported by findings from studies in the UK (5, 20, 23).

The differences between "intentional overdose only" and "self-cutting plus overdose" presentations were less striking than the differences between "intentional overdose only" and "self-cutting only" presentations. There was one exception to this pattern in the multinomial regression: in females, alcohol consumption was significantly associated with presentations of "self-cutting plus overdose" whereas there was a significant inverse association with "self-cutting only". Boenisch et al. (27) similarly found an association between alcohol consumption and method of self-harm, reporting that patients with alcohol use disorder who had consumed alcohol were significantly less likely than other self-harm patients to have used high-risk methods (jumping from height, hanging, shooting).

For the most part, our findings suggest that, when examining factors associated with methods of self-harm, more striking differences may be revealed by comparing presentations

based on the methods themselves, rather than based on whether or not methods of self-harm occurred in combination.

There are a number of recommendations for service provision arising from the current findings. Presentations of self-cutting only were proportionally more likely to occur out-of-hours as compared with presentations of intentional overdose. Earlier studies have found that self-harm patients presenting out-of-hours are less likely to receive a psychosocial or psychiatric assessment compared with those presenting during office hours (15), and that patients engaging in self-cutting are the least likely to receive a psychosocial assessment (15, 28). It appears that the services in place for self-harm patients are at their lowest at the times when the demand for them is greatest and that this paradox is even more striking for self-cutting patients, who are yet more likely to present out-of-hours. Care must be taken to prioritise assessment for these patients. Services founded to facilitate self-harm patients, regardless of self-harm method, will not have the capacity to assist these patients if they operate during office hours only and services should be adapted to fit the prevailing patterns of self-harm presentations.

In terms of aftercare, given that patients presenting with self-cutting are more likely to live in a city (and therefore more likely to have easier access to services), follow-up arrangements with psychiatric or social services should be emphasised. Extended contact with relevant services may help to reduce the high rates of early repetition of self-harm in this subgroup, as evidenced in the current study and previous research (20, 28). There are a number of empirically supported interventions to reduce repetition of self-harm, including dialectical behavioural therapy and problem-solving therapy (29) and, more recently, cognitive-behavioural therapy (30) and mindfulness-based cognitive therapy (31). Given the emerging evidence of differences in motives for self-harm (32), psychosocial difficulties (18, 20), and suicidal intent (17) between self-cutting and other self-harm patients, there may a need to take account of self-harm method used by participants when evaluating interventions for self-harm.

In addition to implications for hospital management, a number of findings emerged that challenge dominant beliefs about self-cutting patients. The association between male gender and self-cutting is one that runs contrary to the concept of self-cutting as a “female problem” (33). Indeed, the current study found a higher absolute number of male than female presentations among “self-cutting only “patients. This study joins an emerging body of research revealing similar proportions of self-cutting within self-harm presentations among men and women (17-21). The over-representation of males in self-cutting in the current study could be attributed to a

tendency of men to inflict more severe damage when self-cutting, increasing the likelihood that they will present to hospital. This hypothesis is supported by previous research showing a tendency towards higher potential lethality of self-harm in males as compared with females (Haw et al., 2003). Unfortunately, interventions targeting self-cutting have tended to be evaluated with samples of female patients only (34). The outcomes of the current study underline the need to verify the efficacy of these interventions for males.

The study outcomes also revealed an association between self-cutting and age, whereby univariate and multivariate analyses showed that young to middle adulthood was particularly associated with self-cutting. A multi-centre study in England also showed that, compared to those presenting with other methods of self-harm, patients presenting with self-cutting tend to be younger (20). It is beyond the scope of the current study and the available data to explore the basis of this association, but the "suicidal process" model (35, 36) suggests that, in the absence of intervention, individuals progress to more lethal self-harm over time.

The current study was in a position to examine the representation of particular vulnerable groups within categories of self-harm methods. Being of no fixed abode, residing in a shelter or an inpatient setting were associated with "self-cutting only" in both males and females. These findings underline the need for initiatives aimed at restricting access to sharp objects in settings where vulnerable people are residing. The potential effectiveness of such initiatives is supported by consistent positive effects of restricted access to other potentially harmful and lethal means in terms of reduced self-harm and suicide risk (37, 38).

Strengths and limitations

The large scale and ongoing nature of the Registry enabled the comparison between subgroups of self-harm patients and prospective follow-up. However, the large scale precludes the collection of more detailed psychological data which could shed further light on the distinction between self-cutting and intentional overdose patients.

The current study was limited to using hospital-based records and hence was unable to examine self-harm that was not hospital-treated or self-harm managed solely by family doctors. One large-scale school-based study of self-harm revealed that episodes of self-cutting are disproportionately unlikely to result in hospital presentation (39). Moreover, the detection of repetition after an index episode was limited to hospital-treated repeat episodes, rather than using a more proactive follow-up method such as interviewing patients to ascertain self-reported

repetition. This may lead to the underestimation of repetition, particularly for repeat episodes of self-cutting. As a result of current legislation on data protection and the lack of unique patient identifiers in Ireland, we were unable to adopt suicide as an outcome in the current study. Patients who did not re-present were assumed not to have repeated but it is likely that a small number of these patients died by suicide or other causes in the year after an index episode. There is also likely to be a small number of people who moved abroad in the year following an index episode. However, given the confidence intervals around the odds ratios, deaths and emigration are unlikely to have majorly affected the association found between self-cutting and repetition. The current study examined both demographic and presentation characteristics and therefore it was necessary to choose between a person-based and episode-based approach. Choosing to use each patient's first presentation in the study period the index episode rendered the demographic comparisons more reliable but this approach meant we were unable to allow for changes in presentation characteristics over repeated presentations. Another limitation is that the quality of the registry data depends on the quality of the medical records. However, agreement on case ascertainment among DROs was examined with kappa statistics exceeding 0.9 reflecting high levels of agreement.

Conclusion

The results of the current study indicate that "self-cutting only" presentations differ significantly from "intentional overdose only" presentations. These differences imply that the management of self-cutting presentations, beyond the obvious differences in medical management, is likely to differ from that of overdose patients. Given the relationship between self-cutting and subsequent repetition, service providers need to ensure that adequate follow-up arrangements and supports are in place for the patient. Although recent years have seen an increase in research into self-harm that has certainly been facilitated by the adoption of a shared definition encompassing many different methods of self-harm, such a definition may introduce a danger of overlooking important differences between self-harm behaviours and their functions, management and outcomes.

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Contributions: EA conceived and designed the study and PC and UR conducted statistical analyses with assistance from EA and CL. CL and EA drafted the script and revisions were made by IJP, UR, and PC. IJP contributed to the establishment of the registry from which the findings are derived. All authors approved the final manuscript.

References

1. Sinclair JMA, Gray A, Hawton K. Systematic review of resource utilization in the hospital management of deliberate self-harm. *Psychological Medicine* 2006; **36**: 1681-93.
2. Cooper J, Kapur N, Dunning J, Guthrie E, Appleby L, Mackway-Jones K. A clinical tool for assessing risk after self-harm. *Annals of Emergency Medicine* 2006; **48**: 459-66.

3. Haw C, Bergen H, Casey D, Hawton K. Repetition of deliberate self-harm: a study of the characteristics and subsequent deaths in patients presenting to a general hospital according to extent of repetition. *Suicide & life-threatening behavior* 2007; **37**: 379.
4. Owens D, Horrocks J, House A. Fatal and non-fatal repetition of self-harm: Systematic review. *The British Journal of Psychiatry* 2002; **181**: 193-9.
5. Cooper J, Kapur N, Webb R, Lawlor M, Guthrie E, Mackway-Jones K, et al. Suicide after deliberate self-harm: A 4-year cohort study. *American Journal of Psychiatry* 2005; **162**: 297-303.
6. Owens D, Wood C, Greenwood DC, Hughes TOM, Dennis M. Mortality and suicide after non-fatal self-poisoning: 16-year outcome study. *British Journal of Psychiatry* 2005; **187**: 470-5.
7. Hawton K, Harriss L, Zahl D. Deaths from all causes in a long-term follow-up study of 11583 deliberate self-harm patients. *Psychological Medicine* 2006; **36**: 397-405.
8. NSRF. National Registry of Deliberate Self Harm Ireland: Annual Report 2010. Cork: NSRF; 2011; Available from: http://www.nsrf.ie/reports/2010AnnualReportNationalRegistryOfDeliberateSelfHarmIreland.pdf.
9. Hawton K, Bergen H, Casey D, Simkin S, Palmer B, Cooper J, et al. Self-harm in England: a tale of three cities. *Social Psychiatry and Psychiatric Epidemiology* 2007; **42**: 513-21.
10. Michel K, Ballinari P, Bille-Brahe U, Bjerke T, Crepet P, Leo DD, et al. Methods used for parasuicide: results of the WHO/EURO Multicentre Study on Parasuicide. *Social Psychiatry and Psychiatric Epidemiology* 2000; **35**: 156-63.
11. Claassen CA, Trivedi MH, Shimizu I, Stewart S, Larkin GL, Litovitz T. Epidemiology of nonfatal deliberate self-harm in the United States as described in three medical databases. *Suicide and Life-Threatening Behavior* 2006; **36**: 192-212.
12. Morey C, Corcoran P, Arensman E, Perry I. The prevalence of self-reported deliberate self harm in Irish adolescents. *BioMed Central Public Health* 2008; **8**: 79.
13. Nixon MKMD, Cloutier PMA, Jansson SMP. Nonsuicidal self-harm in youth: a population-based survey. *Canadian Medical Association Journal* 2008; **178**: 306-12.
14. Ystgaard M, Reinholdt NP, Husby J, Mehlum L. Deliberate self harm in adolescents. *Tidsskrift for den Norske lægeforening: tidsskrift for praktisk medicin, ny række* 2003; **123**: 2241.
15. Gunnell D, Bennewith O, Peters TJ, House A, Hawton K. The epidemiology and management of self-harm amongst adults in England. *Journal of Public Health* 2005; **27**: 67-73.
16. Olfson M, Marcus SC, Bridge JA. Emergency Treatment of Deliberate Self-harm. *Archives of General Psychiatry* 2011; archgenpsychiatry. 2011.108 v1.
17. Harriss L, Hawton K. Suicidal intent in deliberate self-harm and the risk of suicide: The predictive power of the Suicide Intent Scale. *Journal of Affective Disorders* 2005; **86**: 225-33.
18. Hawton K, Harriss L, Simkin S, Bale E, Bond A. Self-cutting: patient characteristics compared with self-poisoners. *Suicide & life-threatening behavior* 2004; **34**: 199.
19. Horrocks J, Price S, House A, Owens D. Self-injury attendances in the accident and emergency department: Clinical database study. *British Journal of Psychiatry* 2003; **183**: 34-9.
20. Lilley R, Owens D, Horrocks J, House A, Noble R, Bergen H, et al. Hospital care and repetition following self-harm: multicentre comparison of self-poisoning and self-injury. *British Journal of Psychiatry* 2008; **192**: 440-5.
21. O'Loughlin S, Sherwood J. A 20-year review of trends in deliberate self-harm in a British town, 1981–2000. *Social Psychiatry and Psychiatric Epidemiology* 2005; **40**: 446-53.

22. Kapur N, Murphy E, Cooper J, Bergen H, Hawton K, Simkin S, et al. Psychosocial assessment following self-harm: results from the multi-centre monitoring of self-harm project. *Journal of affective disorders* 2008; **106**: 285-93.
23. Bergen H, Hawton K, Kapur N, Cooper J, Steeg S, Ness J, et al. Shared characteristics of suicides and other unnatural deaths following non-fatal self-harm? A multicentre study of risk factors. *Psychological medicine* 2011; 1.
24. Oumaya M, Friedman S, Pham A, Abou AT, Guelfi J, Rouillon F. Borderline personality disorder, self-mutilation and suicide: literature review. *L'Encéphale* 2008; **34**: 452.
25. Corstorphine E, Waller G, Lawson R, Ganis C. Trauma and multi-impulsivity in the eating disorders. *Eating Behaviors* 2007; **8**: 23-30.
26. Agresti A. An introduction to categorical data analysis: Wiley-Blackwell; 2007.
27. Boenisch S, Bramesfeld A, Mergl R, Havers I, Althaus D, Lehfeld H, et al. The role of alcohol use disorder and alcohol consumption in suicide attempts-A secondary analysis of 1921 suicide attempts. *European Psychiatry* 2010; **25**: 414-20.
28. Bergen H, Hawton K, Waters K, Cooper J, Kapur N. Epidemiology and trends in non-fatal self-harm in three centres in England: 2000-2007. *The British Journal of Psychiatry* 2010; **197**: 493-8.
29. Hawton K, Arensman E, Townsend E, Bremner S, Feldman E, Goldney R, et al. Deliberate self harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *Bmj* 1998; **317**: 441.
30. Slee N, Garnefski N, van der Leeden R, Arensman E, Spinhoven P. Cognitive-behavioural intervention for self-harm: randomised controlled trial. *The British Journal of Psychiatry* 2008; **192**: 202.
31. Williams JMG, Duggan DS, Crane C, Fennell MJV. Mindfulness Based cognitive therapy for prevention of recurrence of suicidal behavior. *Journal of clinical psychology* 2006; **62**: 201-10.
32. Rodham K, Hawton K, Evans E. Reasons for deliberate self-harm: Comparison of self-poisoners and self-cutters in a community sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry* 2004; **43**: 80-7.
33. Skegg K. Self-harm. *Lancet* 2005; **366**: 1471-83.
34. Binks CA, Fenton M, McCarthy L, Lee T, Adams CE, Duggan C. Psychological therapies for people with borderline personality disorder. Cochrane database of systematic reviews [serial on the Internet]. 2006; (1).
35. Neeleman J, de Graaf R, Vollebergh W. The suicidal process; prospective comparison between early and later stages. *Journal of affective disorders* 2004; **82**: 43-52.
36. van Heeringen K, Hawton K. Pathways to suicide: an integrative approach. *The international handbook of suicide and attempted suicide* 2000; 223-34.
37. Florentine JB, Crane C. Suicide prevention by limiting access to methods: A review of theory and practice. *Social Science & Medicine* 2010; **70**: 1626-32.
38. Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, et al. Suicide prevention strategies. *JAMA: the journal of the American Medical Association* 2005; **294**: 2064.
39. Madge N, Hewitt A, Hawton K, de Wilde EJ, Corcoran P, Fekete S, et al. Deliberate self-harm within an international community sample of young people: comparative findings from the Child & Adolescent Self-harm in Europe (CASE) Study. *Journal of Child Psychology and Psychiatry* 2008; **49**: 667-77.

Table 1: Characteristics of presentations involving self-cutting only, presentations involving self-cutting and intentional overdose, and self-harm presentations of intentional overdose only.

			Men			Women			Total
			S-C	S-C + OD	OD	S-C	S-C + OD	OD	
Presentations			3820 (21.4%)	807 (4.5%)	13183 (74.0%)	2578 (10.4%)	935 (3.8%)	21262 (85.8%)	42585
Patient characteristics	Age*	Aged <15years	56 (25.8%)	11 (5.1%)	150 (69.1%)	113 (12.8%)	35 (4.0%)	737 (83.3%)	1102
		Aged 15-24 years	1542 (26.2%)	334 (5.7%)	4015 (68.2%)	1086 (12.1%)	467 (5.2%)	7392 (82.6%)	14836
		Aged 25-34 years	1136 (23.0%)	243 (4.9%)	3558 (72.1%)	653 (12.0%)	223 (4.1%)	4549 (83.9%)	10362
		Aged 35-44 years	648 (18.2%)	130 (3.7%)	2773 (78.1%)	397 (8.5%)	126 (2.7%)	4129 (88.8%)	8203
		Aged 45-54 years	271 (14.0%)	56 (2.9%)	1603 (83.1%)	219 (7.3%)	61 (2.0%)	2731 (90.7%)	4941
		Aged 55+ years	167 (13.0%)	33 (2.6%)	1084 (84.4%)	110 (5.9%)	23 (1.2%)	1724 (92.8%)	3141
	Lives in a city*	Yes	1252 (24.8%)	293 (5.8%)	3512 (69.4%)	858 (14.2%)	255 (4.2%)	4933 (81.6%)	11103
		No	2568 (20.1%)	514 (4.0%)	9671 (75.8%)	1720 (9.2%)	680 (3.6%)	16329 (87.2%)	31842
	Living circumstances *	No fixed abode	146 (31.0%)	24 (5.1%)	301 (63.9%)	44 (27.0%)	9 (5.5%)	110 (67.5%)	634
		Inpatient	59 (43.1%)	3 (2.2%)	75 (54.7%)	40 (21.7%)	6 (3.3%)	138 (75.0%)	321
		Prisoner	74 (63.2%)	1 (0.9%)	42 (35.9%)	6 (54.5%)	2 (18.2%)	3 (27.3%)	128
		Other	229 (27.8%)	39 (4.7%)	555 (67.4%)	156 (14.2%)	42 (3.8%)	904 (82.0%)	1925
		Private	3312 (20.4%)	740 (4.6%)	12210 (75.1%)	2332 (10.0%)	876 (3.8%)	20107 (86.2%)	39577
Presentation characteristics	Presented 9am - 5pm†*	Yes	913 (19.2%)	215 (4.5%)	3622 (76.3%)	649 (9.5%)	247 (3.6%)	5904 (86.8%)	11550
		No	2864 (22.2%)	585 (4.5%)	9446 (73.3%)	1902 (10.7%)	683 (3.9%)	15141 (85.4%)	30621
	Presented at weekend*	Yes	1310 (23.8%)	275 (5.0%)	3926 (71.2%)	869 (11.0%)	328 (4.1%)	6738 (84.9%)	13446
		No	2510 (20.4%)	532 (4.3%)	9257 (75.3%)	1709 (10.1%)	607 (3.6%)	14524 (86.2%)	29139
	Alcohol involvement*	Yes	1244 (15.3%)	398 (4.9%)	6514 (79.9%)	739 (7.6%)	394 (4.0%)	8627 (88.4%)	17916
		No	2576 (26.7%)	409 (4.2%	6669 (69.1%)	1839 (12.2%)	541 (3.6%)	12635 (84.1%)	24669
	12-month repetition*	<30 days	245 (26.9%)	55 (6.0%)	611 (67.1%)	181 (18.6%)	60 (6.2%)	733 (75.3%)	1885
		31 days-1 year	430 (23.3%)	92 (5.0%)	1323 (71.7%)	354 (13.7%)	132 (5.1%)	2097 (81.2%)	4428
		No	3154 (20.9%)	660 (4.4%)	11249 (74.7%)	2043 (9.6%)	743 (3.5%)	18432 (86.9%)	36272

†414 cases missing

*p<0.05 in chi square analyses

Table 2: Univariate and multivariate odds ratios obtained in multinomial regression using intentional overdose only as reference category

			Self-cutting only		Self-cutting + overdose	
			Univariate OR (95% CI)	Multivariate OR (95% CI)	Univariate OR (95% CI)	Multivariate OR (95% CI)
Males						
Demographic characteristics	Age	Aged <15years	**2.42 (1.71-3.43)**	**2.07 (1.45-2.96)**	**2.41 (1.19-4.87)**	**2.57 (1.27-5.22)**
		Aged 15-24 years	**2.49 (2.10-2.96)**	**2.34 (1.96-2.79)**	**2.73 (1.90-3.93)**	**2.69 (1.87-3.88)**
		Aged 25-34 years	**2.07 (1.74-2.47)**	**2.01 (1.68-2.41)**	**2.24 (1.55-3.25)**	**2.16 (1.49-3.13)**
		Aged 35-44 years	**1.52 (1.26-1.82)**	**1.54 (1.28-1.86)**	**1.54 (1.04-2.27)**	1.48 (1.00-2.18)
		Aged 45-54 years	1.10 (0.89-1.35)	1.12 (0.91-1.39)	1.15 (0.74-1.78)	1.10 (0.71-1.71)
	Lives in a city	Yes	**1.34 (1.24-1.45)**	**1.28 (1.18-1.39)**	**1.57 (1.35-1.82)**	**1.61 (1.38-1.87)**
	Living circumstances	No fixed abode	**1.79 (1.46-2.19)**	**1.64 (1.32-2.02)**	1.32 (0.86-2.01)	1.08 (0.70-1.67)
		Inpatient	**2.90 (2.06-4.09)**	**2.55 (1.79-3.65)**	0.66 (0.21-2.01)	0.71 (0.22-2.25)
		Prisoner†	**6.50 (4.44-9.50)**	**4.89 (3.32-7.20)**	-	-
		Other	**1.52 (1.30-1.78)**	**1.45 (1.23-1.71)**	1.16 (0.83-1.62)	1.15 (0.83-1.61)
Clinical characteristics	Presented 9am -5pm*		**0.83 (0.77-0.90)**	**0.79 (0.72-0.86)**	0.96 (0.82-1.13)	1.02 (0.87-1.20)
	Presented at weekend		**1.23 (1.14-1.33)**	**1.27 (1.17-1.38)**	**1.22 (1.05-1.42)**	**1.19 (1.03-1.39)**
	Alcohol involvement		**0.49 (0.46-0.53)**	**0.51 (0.47-0.56)**	0.99 (0.86-1.15)	1.05 (0.91-1.21)
	12-month repetition	<30 days	**1.43 (1.23-1.67)**	**1.43 (1.22-1.67)**	**1.53 (1.15-2.04)**	**1.55 (1.16-1.06)**
		31 days-1 year	**1.16 (1.04-1.31)**	**1.17 (1.04-1.32)**	1.19 (0.95-1.49)	1.20 (0.96-1.51)
Females						
Demographic characteristics	Age	Aged <15years	**2.40 (1.82-3.17)**	**2.36 (1.78-3.13)**	**3.56 (2.09-6.07)**	**3.98 (1.33-6.80)**
		Aged 15-24 years	**2.30 (1.88-2.82)**	**2.32 (1.88-1.85)**	**4.74 (3.11-7.22)**	**4.85 (3.18-7.41)**
		Aged 25-34 years	**2.25 (1.83-2.77)**	**2.28 (1.84-2.82)**	**3.68 (2.38-5.67)**	**3.57 (2.31-5.51)**
		Aged 35-44 years	**1.51 (1.21-1.86)**	**1.54 (1.23-1.92)**	**2.29 (1.46-3.58)**	**2.13 (1.36-3.34)**
		Aged 45-54 years	1.36 (0.99-1.59)	**1.33 (1.05-1.69)**	**1.67 (2.03-2.72)**	1.58 (0.97-2.57)
	Lives in a city	Yes	**1.65 (1.21-1.80)**	**1.61 (1.47-1.76)**	**1.24 (1.07-1.44)**	**1.26 (1.09-1.47)**
	Living circumstances	No fixed abode	**3.45 (2.43-4.91)**	**2.53 (1.76-1.64)**	1.88 (0.95-3.72)	1.58 (0.79-3.16)
		Inpatient	**2.50 (1.75-3.56)**	**2.05 (1.41-2.97)**	1.00 (0.44-2.27)	1.09 (0.48-2.50)
		Prisoner†	**-**	**-**	**-**	**-**
		Other	**1.49 (1.25-1.77)**	**1.38 (1.15-1.65)**	1.07 (0.78-1.46)	1.04 (0.76-1.43)
Clinical characteristics	Presented 9am -5pm*		**0.88 (0.80-0.96)**	**0.83 (0.76-0.92)**	0.93 (0.80-1.08)	1.01 (0.87-1.18)
	Presented at weekend		**1.10 (1.01-1.20)**	**1.15 (1.05-1.25)**	**1.17 (1.02-1.34)**	1.13 (0.99-1.30)
	Alcohol involvement		**0.59 (0.54-0.64)**	**0.61 (0.56-0.67)**	1.07 (0.93-1.22)	**1.17 (1.02-1.34)**
	12-month repetition	<30 days	**2.23 (1.88-2.64)**	**2.24 (1.88-2.66)**	**2.03 (1.55-2.67)**	**2.16 (1.64-2.85)**
		31 days-1 year	**1.52 (1.35-1.72)**	**1.55 (1.37-1.75)**	**1.56 (1.29-1.89)**	**1.68 (1.39-2.04)**

*414 cases missing

†Prisoner category excluded where n was low