Risk of suicide in patients who present to hospital after self-cutting according to site of injury: findings from the Multicentre Study of Self-harm in England

Galit Geulayov, PhD[1], Deborah Casey, BSc[1], Elizabeth Bale, LCST[1], Fiona Brand, PGCert[1], Caroline Clements, PhD[2], Bushra Farooq, MSc[2], Nav Kapur, FRCPsych[2,3,6], Jennifer Ness, MSc[4], Keith Waters, RMN[4], Anita Patel, MSc[4], Keith Hawton, FMedSci[1,5]

[1]Centre for Suicide Research, Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford, UK

[2]Centre for Mental Health and Safety, Manchester Academic Health Sciences Centre, University of Manchester, Manchester, UK

[3]Greater Manchester Mental Health NHS Foundation Trust, Manchester, UK

[4]Centre for Self-harm and Suicide Prevention Research, Derbyshire Healthcare NHS Foundation Trust, Derby, UK

[5]Oxford Health NHS Foundation Trust, Oxford, UK

[6]NIHR Greater Manchester Patient Safety Translational Research Centre, University of Manchester, Manchester, UK

Corresponding author:

Galit Geulayov, Centre for Suicide Research, Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford OX3 7JX, UK

Galit.geulayov@psych.ox.ac.uk

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Abstract

Background: We compared the risk of death by suicide following hospital presentation for self-harm according to site of self-cut/stab.

Method: We included 54,999 self-harm presentations (involving 31,419 individuals) to hospitals in the Multicentre Study of Self-harm in England (1/1/2004-31/12/2014), with mortality follow-up to 31/12/2019. Information on method of self-harm was obtained through monitoring in hospitals. Information about mortality was obtained through linkage with NHS Digital. We assessed the association of site of self-cut with death by suicide using mixed effect models.

Results: 10,790 (19.6%) hospital presentations involved self-cutting/stabbing, 7,489 of which (69.4%) were due to laceration to the arm/wrist alone, 1,846 episodes (17.1%) involved cutting elsewhere on the body, and 1,455 (13.5%) were due to laceration to unknown site. Controlling for confounders, presentation to hospital following self-cut/stab to bodily parts other than wrist/arm was associated with greater chance of subsequent suicide relative to presentation after self-poisoning alone [adjusted odds ratio (aOR) 1.75, 95% confidence interval (CI) 1.03-2.96, P=0.038]. The likelihood of suicide after presentation for cutting/stabbing the wrist/arm alone was comparable to that of patients who had self-poisoned alone. Presentations after laceration involving the neck were associated with a 4-fold greater chance of subsequent suicide relative to self-poisoning (aOR 4.09, 95% CI 1.80-9.30, p=0.001).

Conclusions: Patients who attend hospital after self-cutting/stabbing are a heterogeneous group in terms of characteristics, methods of cutting/stabbing and risk of subsequent suicide. Risk of suicide is greater in individuals who self-cut/stab to parts of the body other than the wrist or arm, especially the neck.

Introduction

Self-harm is associated with greater risk of premature death, especially by suicide (Bergen et al., 2012b). Previous research has shown that certain methods of self-injury are associated with elevated risk of subsequent death by suicide when compared to self-harm by poisoning (Bergen et al., 2012a; Geulayov et al., 2019; Runeson, Haglund, Lichtenstein, & Tidemalm, 2016; Runeson, Tidemalm, Dahlin, Lichtenstein, & Långström, 2010). However, findings in relation to self-cutting and risk of subsequent suicide have been mixed (Bergen et al., 2012a; Olfson et al., 2017; Runeson et al., 2016; Runeson et al., 2010) although in all of these studies the risk of suicide in patients who presented to hospital for self-cutting or stabbing was comparable to the risk of suicide following self-harm by poisoning. Recent studies suggest that individuals who cut themselves are a heterogeneous group who vary by method of laceration (e.g. site of cut, severity of self-cut injury), the involvement of other methods of self-harm, their psychopathology as well as gender and age and thus their outcomes may vary.

Self-cutting often involves the wrist and arm, but cuts to other parts of the body are also common. Laukkanen et al. (Laukkanen, Rissanen, Tolmunen, Kylma, & Hintikka, 2013) found that self-cutting on parts of the body other than the arm was associated with female gender, more severe psychiatric symptoms and suicidal ideation relative to self-cutting on the arm. A study on adolescents (Gardner et al., 2020) has shown that concealed self-cutting was associated with previous self-harm, current psychiatric treatment and greater risk of self-harm repetition. A single site study (Carroll et al., 2016) found that suicide risk was 4.5-times greater after cutting to areas other than the wrist/arm relative to self-poisoning. No suicides by individuals who presented to hospital after self-cutting the wrist or arms were observed so it is not clear how site of laceration compares in terms of suicide risk. However, this study was relatively small, involving a short follow-up (mean of 2 years), during which 27 deaths by suicide were identified. In another study, investigators showed comparable risk of death by either suicide or a cause other than suicide in patients who presented to hospital

for self-cutting to the wrist or arm alone, those who self-cut elsewhere than wrist or arm, and in patients who had self-poisoned. However, this study was also small, including 69 suicides in total (Birtwistle, Kelley, House, & Owens, 2017).

Using data from the Multicentre Study of Self-harm in England, we aimed to (a) describe the characteristics of patients who had presented to general hospitals following self-cut or stab according to site of laceration, and (b) investigate the relative risk of death by suicide in relation to site of self-cut or stab. We distinguished between those who cut their wrist or arm versus another site. This division was consistent with previously published research (Carroll et al., 2016; Morey, Mellon, Dailami, Verne, & Tapp, 2017). We further examined patients' characteristics and outcomes according to specific site of self-cut or stab (e.g. neck, leg).

Method

This observational cohort study is based on data from the Multicentre Study of Self-harm in England. It includes follow-up for mortality through record linkage to the national mortality register. Information on site of self-cut or stab was available for presentations occurring between 2004 and 2014. Followed-up for mortality to 31.12.2019.

Study setting and participants

The Multicentre Study is an ongoing study which involves five general hospitals from three cities in England: Oxford (one hospital), Manchester (three hospital) and Derby (two hospitals until 2009, subsequently merged into one hospital). All presentations to the emergency departments following an episode of non-fatal self-harm between 1 January 2004 and 31 December 2014 were included. We included individuals aged 10 years or older at their first recorded hospital attendance.

Information on demographic and clinical characteristics of patients was collected through either (a) psychosocial assessments (of the patient's mental state, risks and needs) by specialist psychiatric clinicians in the general hospital, or (b) for patients who had not received a psychosocial assessment, through data extracted from emergency department electronic databases by trained staff. The latter yields less complete information.

We used an episode-based approach, a method which we used previously (Geulayov et al., 2019). Patients who self-cut tend to repeat self-harm more often than patients using other methods (Larkin, Di Blasi, & Arensman, 2014; Lilley et al., 2008). Therefore, including all episodes in the analysis rather than selecting a single (index) episode is imperative.

Measures

Non-fatal self-harm. Refers to any act of intentional self-poisoning or self-injury, irrespective of the nature of the motivation including degree of suicidal intent (Hawton et al., 2003). Self-poisoning includes the intentional ingestion of any drug in an amount that is more than that prescribed or recommended, or the ingestion of non-ingestible substances, overdoses of 'recreational drugs', and severe alcohol intoxication where clinical staff consider this to be an act of intentional self-harm. Self-injury is defined as any injury that has been intentionally self-inflicted.

Self-harm episodes are identified through a) completion of monitoring forms on all self-harm patients assessed by the general hospital psychiatric service; and b) scrutiny of emergency department electronic databases by research clerks using a detailed protocol in order to identify all other patients presenting to the hospital following self-harm which have not been assessed.

Site of laceration. We grouped episodes as follows (groups are mutually exclusive): 1. Self-cut or stab to wrist or arm alone (which could include either or both sites within this category); 2. Self-cutting or stabbing to other (than wrist or arm) bodily part/s involved (may also include laceration to wrist or arm in addition to other sites); 3. Self-cut or stab to unknown site; 4. Other method of self-injury; 5. Self-poisoning alone.

In a subsequent analysis we also grouped episodes according to the specific site of laceration: 1. Head; 2. Neck; 3. Torso; 4. Wrist or arm; 5. Leg; 6. Groin; 7. Other (e.g. genitals); 8. Unknown site. Each group may include episodes in which the person lacerated only the specific site of interest or the site of interest in combination with an additional site (i.e. not mutually exclusive groups. Although they were mutually exclusive in relation to the reference group of patients who present to hospital after self-poisoning alone).

Information on the specific site of self-cut was collected in Oxford during 2004-2014, in Manchester in 2005-2011, and in Derby in 2004-2013.

History of self-harm. Patients were assigned a positive status if they had a previous recorded presentation to hospital in the study database, reported previous self-harm during their psychosocial assessment, or were identified with a prior self-harm episode through the hospital electronic records.

Psychiatric care. Patients who were identified as having previously received or currently receiving psychiatric treatment in a specific episode through either their psychosocial assessment or the hospital electronic records were assigned a positive status in this and for all subsequent episodes. A negative status was assigned to patients who had no record of psychiatric treatment through any of these sources. Otherwise this item was considered as not known.

Linkage to mortality register

Information on mortality was obtained through record linkage with data from NHS Digital. Follow-up for mortality was until 31.12.2019. Individuals were followed up for a minimum of five years and a maximum of 15 years. Cause of deaths was based on the International Statistical Classification of Diseases and Related Health Problems version 10 (ICD-10). ICD-10 codes of intentional self-harm (codes X60-X84) or death due to undetermined intent (codes Y10-Y34) were defined as suicide deaths, as currently practiced in the UK (Gunnell et al., 2013; Linsley, Schapira, & Kelly, 2001; Office for National Statistics, 2015).

Ethical approval

The monitoring systems in all three research sites have approval to collect data on self-harm for local and multicentre projects. The monitoring systems in Oxford and Derby have approval from local National Health Service (NHS) Research Ethics Committees. Self-harm monitoring in Manchester is part of a clinical audit system, and has been ratified by the local Research Ethics Committee. All three monitoring systems are fully compliant with the Data

Protection Act 1998. All centres have approval under Section 251 of the NHS Act 2006 to collect patient identifiable information without patient consent. Each of the three centres holds a data sharing agreement with NHS Digital to conduct mortality linkage with respect to their cohort.

Statistical analyses

Observations were excluded if patients had missing information on gender, age, or mortality (lost to follow-up) or if their cause of death was unknown (Figure 1).

The characteristics of patients who were included and excluded from the analysis were compared using analysis for categorical and continuous variables as appropriate (supplementary table S1).

We used mixed-effect logit regression models to examine the associations between site of self-cut at hospital presentation and subsequent suicide. All episodes of self-harm were used in these regression analyses with suicide as the dependent variable and random intercepts at patient level to account for clustering of episodes in patients.

Two sets of models were run: 1) comparing the likelihood of suicide after hospital presentation for self-harm in patients who self-cut/stab to wrist/arm, self-cut/stab elsewhere on the body (regardless of whether or not self-cut/stab to wrist/arm was also involved), other self-injury, or self-poisoning alone; and 2) comparing the likelihood of suicide in patients who self-cut or stab by specific site of self-cut or stab (wrist/arm, neck, torso see list above) relative to self-harm by poisoning.

Unstructured covariance of multiple episodes per patient was specified. Post-estimation Intraclass Correlation Coefficients (ICCs) were used to estimate the amount of variation accounted for by the latent variable (patient). Likelihood ratio (LR) tests indicated that clustering of patients in hospitals was not required. Gender, age (in years), previous self-harm, psychiatric treatment, and hospital were included as covariates unless otherwise

specified. These covariates were selected a priori as they have been shown to influence suicide risk and were associated with the exposure variables of interest (Rudd et al., 2006).

We examined suicide risk by time of follow-up including first year and four-year suicide risk after hospital attendance for self-harm.

Sensitivity analyses

1. We re-ran the models using data from 2005-2011 only because data in one centre were available for this period only, allowing for an equal follow-up period for patients in the three centres.
2. We excluded patients if their history of self-harm was unknown. This variable was missing for ~20% of self-harm episodes.
3. We further examined the impact of excluding episodes where psychiatric treatment was unknown, also missing for ~20% of self-harm episodes.
4. Episodes which also involved self-poisoning (4.7% of episodes) were excluded in order to examine how site of self-cutting/stabbing alone relates to suicide.
5. We re-ran the analysis using penalised maximum likelihood regression to explore a possible sparse data bias.

Analyses were carried out using Stata 14.2.

Results

During the study (2004 to 2014), there were 59,459 presentations to the study hospitals by 33,831 patients. Patients who were missing information on age or gender (74 episodes by 74 patients), follow-up for mortality (4,111 episodes by 2,236 patients), and cause of death (275 episodes by 106 persons) were excluded resulting in 31,415 patients involved in 54,999 presentations to the study hospitals (93% of the intended sample, see Figure 1).

A comparison between included and excluded individuals is shown in appendix (Table S1).

Sample characteristics

Over two-thirds (69%) of presentations to hospital in 10-24 year-olds were by females, decreasing to a little over 50% in older patients (Table 1).

The majority of episodes involved self-poisoning alone (41,107/54,999, 74.7%), 61.4% by females. A further 7,489 episodes (13.6%) were due to laceration to the arm or wrist (61.4% by females), while 1,846 episodes 3.4% involved cutting or stabbing elsewhere on the body (56.1% by females). In 1,455 of episodes (2.7%) the site of cut or stab was unknown (59.7% by females). The remaining episodes (3,102, 50.6%) were due to self-injury other than cutting or stabbing (46.2% by females).

Characteristics of patients who self-cut/stab

61% of patients who self-cut or stab their wrist or arm alone were females (the same proportion as for self-poisoning). Females represented 56% of patients whose cut or stab involve other bodily sites (Table 1).

Although based on small numbers, of note is the greater involvement of males than females in intentional cut or stab to their neck (4.8% versus 2.4%), head (3.2% versus 1.5%) and torso (6.2% versus 4.1%) (all $p<0.0001$). The involvement of leg in cutting was more

common in females (8.6%) than in males (6.2%), p<0.0001. The proportion of patients who presented after a cut or a stab to more than one part of the body was similar in the two genders (Table 2).

The involvement of sites other than wrist/arm was more common in patients 55 years and older (120/520 episodes, 23.1%) than in 15-24 year-olds (705/4,489 episodes, 15.7%) (results not shown).

The proportion of patients who were currently receiving psychiatric treatment and/or had done so in the past was 70% among those whose cut or stab involved another bodily site (other than wrist or arm) relative to 65% in those cutting their wrist or arm. The age distribution and history of previous self-harm were very similar in these two groups (Table S2).

Site of cut or stab and subsequent suicide

Site of cut/stab was associated with likelihood of subsequent suicide (Table 3). Presenting to hospital with self-cut or stab to bodily parts other than wrist or arm was associated with 1.8-fold greater chance of subsequent suicide relative to presenting to hospital after self-poisoning alone [odds ratio (OR) 1.83, 95% confidence interval (CI) 1.10-3.03, p=0.02]. This was also the case after adjusting for gender, age, previous self-harm, psychiatric care and hospital [adjusted OR (aOR) 1.75, 95% CI 1.03-2.96, P=0.038]. The likelihood of death by suicide after presentations to hospital for cut or stab to the wrist or arm alone (not involving other sites of self-cut or stab) was comparable to that observed after self-poisoning alone.

Controlling for confounders, the likelihood of death by suicide following cut or stab to an unknown bodily site was higher relative to that of patients who had attended hospital for self-poisoning alone (aOR 2.39, 95% CI 1.39-4.11, P=0.002).

Specific site and subsequent suicide

Compared to hospital attendances after self-poisoning alone, presentation after laceration involving the neck was associated with a 4-fold greater chance of subsequent suicide after adjusting for covariates as above (aOR 4.09, 95% CI 1.80-9.30, p=0.001) (Table 3). Hospital attendance after cut or stab to all other specific sites showed that the likelihood of suicide in relation to these sites of self-cut or stab was comparable to that observed for after self-poisoning alone.

There was no evidence for gender differences in risk of suicide according to site of self-cut or stab although the gender specific models were based on small groups.

The intraclass correlation coefficients (ICC) ranged between 0.58-0.61 (Table 3), indicating moderate correlation between episodes within the patient cluster variable (i.e. episodes of the same person resemble each other).

Suicide following self-harm by time of follow-up

One-year risk of suicide: 201 suicides occurred within the first year after hospital attendance. Relative to presentation to hospital after self-poisoning alone, the likelihood of suicide was higher in relation to presentations which involved intentional cutting or stabbing to bodily parts other than wrist or arm alone (aOR 2.28, 95% CI 1.05-4.92, P=0.037). Presentations to hospital after lacerations to wrist or arm were associated with comparable suicide risk to that of patients who self-poisoned (aOR 1.04, 95% CI 0.60-1.80, P=0.88) (Table S3).

Four-year risk of suicide: 333 suicides were recorded within the first four years of hospital attendance. The likelihood of suicide was higher after presentations to hospital which involved self-cutting or stabbing elsewhere than wrist or arm alone (aOR 1.82, 95% CI 0.98-3.38, P=0.058). Presentations after lacerations to wrist or arm had a comparable suicide risk to presentations after self-poisoning alone (aOR 1.23, 95% CI 0.83-1.82, P=0.31).

The heightened suicide risk after hospital attendance for self-cut or stab to the neck was evident one-year after the episode (aOR 3.49, 95% CI 0.93-13.14, p=0.07) and after four years (aOR 3.48, 95% CI 1.29-9.37, p=0.014), adjusting for covariates as above although at one-year the p value exceeded the conventional significance level. However, the effect estimates were almost identical at the two follow-up time points (Table S3).

Sensitivity analyses

Table S4 shows the findings from the sensitivity analyses (see supplementary material).

Using the data of patients who had presented during 2005 and 2011 (25,790 patients involved in 43,286 presentations to hospital for self-harm) was in keeping with the findings from the main analysis.

Excluding episodes where information on previous self-harm or psychiatric care was missing resulted in attenuated effect estimates of some but not all models. For example, after excluding the data of patients whose previous self-harm status was unknown, the involvement of cut or stab to bodily parts other than the wrist or arm was associated with higher likelihood of subsequent death by suicide but after adjustment for confounders the association was not statistically significant at the conventional significance level (aOR 1.65, 95% CI 0.89-3.04, p=0.11). Nevertheless, the increase in risk of subsequent suicide in patients who presented to hospital for intentional cut or stab to their neck was not attenuated after excluding patients with missing information on previous self-harm or psychiatric care e.g. (adjusted model excluding episodes where previous self-harm was not known: aOR 4.92, 95% CI 2.03-2.89, p<0.0001).

Excluding episodes which also involved self-poisoning (4.7% of episodes) showed that the risk of suicide was greater in relation to episodes involving self-cutting or stabbing elsewhere than wrist or arm but the association was not statistically significant after adjustment for confounders (aOR 1.65, 95% CI 0.92-2.94, p=0.09). Nevertheless, the risk of subsequent

suicide in patients who presented to hospital for intentional cut or stab to their neck was in keeping with the findings from the main analysis (aOR 4.60, 95% CI 1.92-11.03, p=0.001).

Furthermore, the results from models in which we included only presentations which occurred in 2005-2011 (overlapping period in all three centres) were consistent with findings from the main analyses also after excluding the above sub-groups. For example, the involvement of a cut or stab to sites other than wrist or arm was associated with heightened suicide risk after self-harm after excluding patients whose episode of self-cut or stab also involve self-poisoning (aOR 2.08, 95% CI 1.11-3.88, p=0.021) (Table S4).

Discussion

We estimated the likelihood of subsequent death by suicide in patients attending hospital for self-harm according to the bodily site of self-cut or stab relative to patients who self-poisoned. Self-cutting varied considerably from cuts or stab to one's wrist or arm to laceration to the neck, head or torso. Self-cutting or stabbing to neck, head and torso were more common among males compared to females while cutting or stabbing wrist or arm and leg were slightly more common among females. The likelihood of subsequent death by suicide in patients who present to hospital after self-cutting or stabbing to their wrist or arm was comparable to that of patients who had presented to hospital after self-poisoning. The likelihood of subsequent death by suicide in patients whose cutting or stabbing involved other bodily parts was almost twice that of patients who had attended hospital after self-poisoning.

Similarly, findings by an earlier relatively small study (Carroll et al., 2016) have shown that lacerations to bodily parts other than wrist or arm had been associated with increased risk of suicide relative to self-poisoning, although the investigators did not compare the risk of death by suicide in relation to lacerations to the wrist or arm since no suicides were observed in this group at the time follow-up ended. In the present study, however, we were also able to compare laceration to wrist/arm with self-harm by poisoning (a comparison which, to the best of our knowledge, has not been reported before). Our long follow-up and the large sample enabled us to also observe suicide in patients who lacerated their wrist or arm (as well as other specific sites of cutting). The estimated increase in risk of suicide in individuals whose laceration involved other parts of the body (than the wrist or arm) in our study was considerably smaller than that reported by Carroll et al. (Carroll et al., 2016). This could be attributed to several methodological differences. We used all hospital presentations and accounted for multiple episodes by some individuals statistically while other studies have tended to base their estimates of suicide risk on the person's first recorded presentation to hospital. Differences in the duration of follow-up may have also accounted for the above; it

has been shown that the risk of suicide varies by time since hospital attendance, with suicide risk being particularly high nearer the time of hospital attendance for self-harm (Cooper et al., 2005; Geulayov et al., 2019; Hawton et al., 2015; Kuo, Gunnell, Chen, Yip, & Chen, 2012). In a further analysis we estimated the one-year and the four-year risk of suicide after hospital attendance. The estimates from these analyses were consistent with those of the main analysis.

Previous studies have shown that patients who cut elsewhere than wrist/arm show more severe psychopathology (Gardner et al., 2020; Laukkanen et al., 2013; Morey et al., 2017) . More severe psychopathology may have contributed to the higher risk of suicide in patients whose laceration involved bodily parts other than their wrist or arm. In our study we found that 70% of patients whose laceration involved another bodily part have been in contact with psychiatric care relative to 65% of patients who cut their wrist or arm with no involvement of other sites. However, our analysis has shown that cutting or stabbing to other bodily parts was associated with greater risk of suicide after accounting for psychiatric care although the finding that information on psychiatric care was missing for 20% of patients and that this was higher among the non-assessed and hence more so among patients who self-cut (whose assessment rate is lower than for patients presenting after other methods of self-harm) suggest that our findings need to be interpreted with caution.

It may be that suicidal intent vary by site of self-cut. Suicide intent may explain some of the variation in characteristics and adverse outcomes and may be an important subject of future research. However, it should be highlighted that individuals who self-harm without, or with low suicidal intent, may also die by suicide and that these patients are also at risk of other adverse outcomes relative to the general population (Carroll et al., 2016; Mars et al., 2014).

It is commonly assumed that individuals who self-cut are less likely than other patients who self-harm to die by suicide. Self-cutting is often referred to as non-suicidal self-injury (Taylor et al., 2018) . However, studies from various countries show that the risk of suicide in patients who self-cut or stab is comparable (Olfson et al., 2017; Runeson et al., 2010) or

even higher (Bergen et al., 2012a; Runeson et al., 2016) than that of many other patients who self-harm using other methods. Evidence from previous studies have shown that many patients who attend hospital following self-harm are discharged without appropriate evaluation or a care plan. Of particular concern is the finding that individuals who self-cut are less likely than patients using other methods of self-harm to receive psychosocial assessment when presenting to hospital (Bennewith, Peters, Hawton, House, & Gunnell, 2005; Geulayov et al., 2016; Kapur et al., 2008).

It is important to recognise that all patients who self-harm carry a significant risk of subsequent suicide. Using data from the Multicentre Study of Self-harm, we have shown that patients who present to hospital for self-harm are 50 times more likely to die by suicide relative to the general population, and that this risk was as high as 175 times greater during the first month after hospital attendance (Geulayov et al., 2019). Thus, clinicians who encounter patients who self-harm need to provide a comprehensive psychosocial assessment and jointly plan follow-up care which is tailored to the patient's needs. This includes all patients who cut themselves. Of note is the particularly high suicide risk in patients who present to hospital following cut or stab to their neck. It is worth highlighting that self-harm which occurs in the community and which may or may not result in presentation to hospital or other healthcare facilities often involves self-cutting. Little is known about the risk of death by suicide of this group of individuals and how it compares with other methods of self-harm and with that of patients who self-cut and whose self-harm result in hospital attendance. Furthermore, their care needs are also poorly understood.

Strengths and limitations

This is a large multicentre study which spans over 15 years. This allowed us to accrue a sizable group of patients who had presented to hospital after self-cutting or stabbing bodily sites which are less commonly observed. This study also includes a socioeconomically diverse population (Geulayov et al., 2019). Furthermore, data on mortality were obtained

through a national register which means that we were less likely to have missed information about suicides which may have occurred outside the catchment areas involved in this study. However, it is limited in several ways.

For about 13.5% of episodes where self-cutting or stabbing was recorded as the method of self-harm, there was no further information about the site of cut or stab. Those patients were more likely than patients who had presented to hospital after self-poisoning alone to die by suicide by the end of follow-up. In this group, the proportion of patients who had received a psychosocial assessment following their presentation to hospital was 39% relative to 47% of patients who presented after cutting or stabbing to arm or wrist and 49% whose presentation involved a site other than wrist or arm (Table S2).

For about 20% of presentations information on previous self-harm and psychiatric care was missing. Further examination of our data has shown that the proportion of assessed episodes and hence the proportion of missing information on these two variables was disproportionately higher for patients who had self-cut. This is because, as noted above, this method of self-harm is least likely to result in an assessment during hospital attendance.

Our analysis of the association between specific sites of cut or stab and suicide relies on some small groups so the possibility of sparse data bias should be acknowledged. However, we assessed the possible sparse data bias using penalised maximum likelihood regression models, the estimates from which were consistent with those of the main analysis.

Furthermore, for each centre information was available for a different period of time. This is because the centres collected this additional information as part of their core variables during different periods. As we mentioned above, we addressed this by excluding the data for non-overlapping periods, the results of which led to the same conclusion.

Lastly, we did not have detailed information about the nature of the self-cut act. First, we could not distinguish between self-cutting and self-stabbing as these were recorded as a single group. Furthermore, we did not have information about the depths and severity of the

lacerations or the number of cuts because this information was not recorded in the raw data. Risk of suicide may vary between these different methods.

Conclusions

Patients who cut or stab themselves and attend the hospital are a heterogeneous group. While some present to hospital after relatively superficial lacerations others may attend due to lacerations which could be more severe and potentially life threatening. The bodily parts involved in the act of self-cut or stab also vary from lacerations to the arm or wrist to those involving the head, neck and abdomen. Patients' characteristics as well as their risk of subsequent death by suicide may also vary considerably. This heterogeneity in profile and risk suggest that practitioners who encounter them in medical settings need to address their individual risk and needs. Appropriate psychosocial assessment and follow-up care should be offered to all patients, as specified in clinical guidelines (National Institute for Health and Care Excellence, 2004; National Institute for Health and Clinical Excellence 2011). In considering risk and needs of those who self-cut, there should be special caution in addressing the needs of those who cut parts of the body other than the wrist or arm, especially when self-cut or stab involves the neck.

Contributors

KH and GG were responsible for study conception and design, and interpretation of the results. GG was responsible for data analysis. DC, LB, FB, NK, CC, BF, JN, AP and KW acquired the data. GG drafted the report, which all authors critically revised for intellectual content. All authors approved the final report and are accountable for all aspects of this work.

Declaration of interests

KH declare grants from the National Institute for Health Research and the Department of Health and Social Care. He is a member of the National Suicide Prevention Strategy for England Advisory Group. KH is a National Institute for Health Research (NIHR) Senior Investigator (Emeritus).

NK is a members of the Department of Health's National Suicide Prevention Advisory Group. NK chaired the NICE guideline development group for the longer-term management of self-harm and is currently Topic Advisor for the new NICE self-harm guideline. He also chairs the NICE guideline committee for depression in adults.

All other authors declare no competing interests.

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