

## Self-harm

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The term self-harm is commonly used to describe a wide range of behaviours and intentions including attempted hanging, impulsive self-poisoning, and superficial cutting in response to intolerable tension. As with suicide, rates of self-harm vary greatly between countries. 5–9% of adolescents in western countries report having self-harmed within the previous year. Risk factors include socioeconomic disadvantage, and psychiatric illness—particularly depression, substance abuse, and anxiety disorders. Cultural aspects of some societies may protect against suicide and self-harm and explain some of the international variation in rates of these events. Risk of repetition of self-harm and of later suicide is high. More than 5% of people who have been seen at a hospital after self-harm will have committed suicide within 9 years. Assessment after self-harm includes careful consideration of the patient's intent and beliefs about the lethality of the method used. Strong suicidal intent, high lethality, precautions against being discovered, and psychiatric illness are indicators of high suicide risk. Management after self-harm includes forming a trusting relationship with the patient, jointly identifying problems, ensuring support is available in a crisis, and treating psychiatric illness vigorously. Family and friends may also provide support. Large-scale studies of treatments for specific subgroups of people who self-harm might help to identify more effective treatments than are currently available. Although risk factors for self-harm are well established, aspects that protect people from engaging in self-harm need to be further explored.

Self-harm is a common clinical problem, but it is poorly understood and arouses ambivalent feelings in health professionals. Medical services are largely focused on helping people who have been afflicted by illnesses beyond their control. Even when accidents occur through carelessness, or when people take excessive risks, or do not look after themselves properly, doctors can usually accept their role as carer with equanimity. But when patients deliberately inflict harm on themselves by, for example, taking overdoses or cutting themselves, the contract between doctor and patient is severely tested. If the behaviour is viewed as an attempt to end one's life, health professionals are more sympathetic than when they believe the person is engaging in self-harm for some other purpose.<sup>1</sup>

People who deliberately harm themselves but survive used to be regarded as "failed suicides". As the rate of hospital admissions for attempted suicide rose in the 1960s, realisation grew that many of these people were not, in fact, wanting to die,<sup>2</sup> although there was also recognition of the greatly increased risk of later suicide.<sup>3</sup> Since the term self-harm includes a wide range of behaviours and people engaging in self-harm are a heterogeneous group, caution is needed when generalising about self-harm.

### Terminology

Suicide researchers have tried for nearly half a century to find satisfactory terms for the range of suicidal behaviours.<sup>4</sup> Panel 1 lists some commonly used terms; usage varies considerably between countries.

Some workers favour "attempted suicide" as an umbrella term that recognises the high risk of suicide in people who self-harm, even though the label may not be very precise.<sup>5</sup> This term is in common usage in North America, as is "deliberate self-harm" to indicate bodily harm without suicidal intent.<sup>6</sup> But "deliberate self-harm"

as it has been used in the UK<sup>7</sup> and "parasuicide" as used in the World Health Organization/European Study on Parasuicide<sup>8</sup> include all suicide methods, and avoid ascribing intent rather than implying lack of intent. Description of the behaviour first and clarification of intent later is probably more realistic than trying to label behaviours from the outset; this approach mirrors the way in which clinicians tend to refer to self-harm.

### Behaviours involved in self-harm

For the purposes of this Seminar, self-harm will be broadly defined (see figure 1 for a list of candidate behaviours). Although self-harm with highly lethal behaviours and strong suicidal intent will not be excluded, I will focus on behaviours such as overdosing and cutting (which represent most hospital presentations for self-harm)<sup>9</sup> and on other behaviours that population-based studies have reported to be common.<sup>10–13</sup> Self-mutilation, although part of the self-harm spectrum, will be described separately when possible. The difficulty is where to draw the line between self-harm and other potentially harmful behaviours.

Actions with a low likelihood of death but covered by the term "self harm" have been described as suicidal behaviours,<sup>10</sup> deliberate self-harm,<sup>14,15</sup> "other self-harmful behaviours",<sup>11</sup> self-mutilation,<sup>12,16–18</sup> self-wounding,<sup>19</sup> and self-injurious behaviour (figure 1).<sup>20</sup>

### Search strategy and selection criteria

I searched MEDLINE, EMBASE, PsycINFO, and the Cochrane database of systematic reviews using the terms "self-injurious behaviour", "self-mutilation", "attempted suicide" and "parasuicide", linked with keywords relevant to the subsections. For some key articles, I did citation index searches. Several earlier key publications known to the author were also cited.

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**Panel 1: Terms for non-fatal self-inflicted harm****Attempted suicide**

Used widely (especially in North America) for episodes where there was at least some suicidal intent, or sometimes without reference to intent. Repetitive bodily harm may be excluded.

**Deliberate\* self-harm**

Used in UK for all episodes survived, regardless of intent.

North American usage refers to episodes of bodily harm without suicidal intent, especially if repetitive. Usually excludes overdoses and methods of high lethality.

**Parasuicide**

Episodes survived, with or without suicidal intent (especially in Europe) or episodes without intent. Repetitive bodily harm may be excluded.

**Self-poisoning or self-injury**

Self-harm by these methods regardless of suicidal intent.

**Self-mutilation**

Serious bodily mutilation (such as enucleation of eye) without suicidal intent.

Repetitive superficial bodily harm without suicidal intent (synonymous with North American term deliberate self-harm). Also known as self-injurious behaviour, self-wounding.

Sometimes the term is used to describe both the above meanings and also stereotypical self-harm in intellectually disabled people.

\*The adjective "deliberate" is now not favoured by patients in the UK.

People who repeatedly engage in behaviours that result in mild-to-moderate tissue damage (often called self-injury or superficial self-mutilation)<sup>16</sup> are thought to be quite different from other self-harmers, and as such they are sometimes excluded from studies of self-harm.<sup>8,21</sup> Information about these behaviours has been largely gleaned from psychiatric populations.<sup>22,23</sup> Suicidal intent

is typically absent in self-mutilation, which has been described as a means of averting suicide,<sup>23</sup> as a morbid form of self-help,<sup>16</sup> and as addictive.<sup>24</sup> Nevertheless, to exclude these behaviours from the broad concept of self-harm could be premature. Self-mutilating actions are not uncommon in non-clinical samples of adolescents,<sup>12,13,18</sup> and are not necessarily habitual.<sup>13,18</sup> Moreover, some who self-mutilate also take overdoses or attempt other traditional methods of suicide,<sup>25,26</sup> and some commit suicide.<sup>22</sup>

Other self-harming behaviours that do not result in tissue damage (for example, exercising to hurt oneself or stopping medication with the intention of causing harm) fall beneath usual definitions of self-harm, yet they are worth studying because of the co-occurrence with more serious behaviours.<sup>11</sup> Even further removed from the traditional methods of suicide are risky behaviours such as skydiving<sup>5</sup> or so called chronic suicide—eg, by abuse of alcohol<sup>27</sup>—which are beyond the scope of this article.

**Intentions**

Self-harm cannot be discussed without consideration of intent. Although lethality and suicidal intent are strongly correlated,<sup>28</sup> when survivors of near-fatal self-harm were interviewed, only two-thirds had suicidal thoughts.<sup>29</sup> Previous suicide attempts, particularly serious ones, are a major risk factor for suicide, yet most survivors are still alive 5 years after their suicide attempt.<sup>30</sup>

Most people admitted to hospital after an overdose neither want nor expect to die.<sup>31</sup> Self-harm is often impulsive. Even for near fatal attempts, the decision may have been made only minutes beforehand.<sup>32</sup> Intentions commonly reported by people who have taken an overdose (drawn from a list offered by an interviewer) are to gain relief from a terrible state of mind, to die, to seek help, to influence someone,<sup>33</sup> not being able to think of any alternative, and “it seemed that I lost control of myself and I did not know why I did it”.<sup>9</sup> Respondents usually reported more than one intention.<sup>9</sup>

For adolescents, help-seeking has not usually been given as a reason.<sup>34</sup> Williams<sup>35</sup> has proposed that self-harm be viewed as a “cry of pain” rather than a “cry for help”. In a Swiss study,<sup>9</sup> patients endorsed intrapersonal reasons more often than they did interpersonal reasons, such as trying to influence others. Studies in several non-European countries<sup>36–39</sup> have emphasised the role of interpersonal conflict, which of course also often precedes self-harm in western countries.

In a qualitative analysis of recurrent self-harm on a deprived Scottish housing estate,<sup>40</sup> the researcher was struck by the extent to which participants minimised their capacity to change their lives. He suggested a need for a shift away from causal antecedents of the behaviour (Naturalwissenschaften) to an understanding based on meanings, motives and intentions (Geisteswissenschaften).

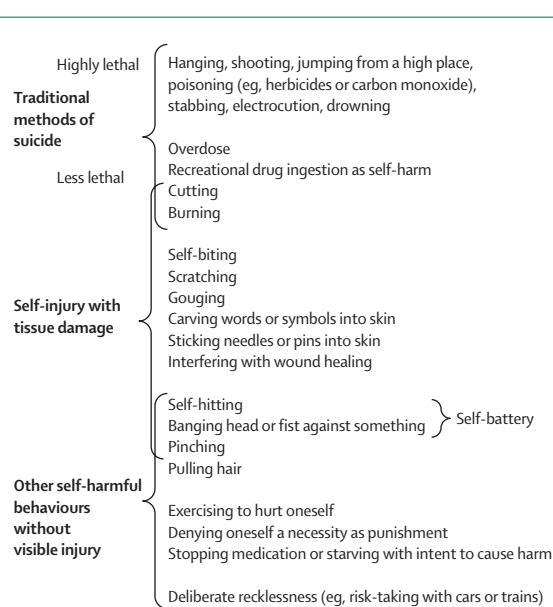


Figure 1: Behaviours included in descriptions of non-fatal self-inflicted harm

Recently, people sampled from the general population have been asked about intentions rather than just about “suicide attempts”.<sup>11,34</sup> About half the respondents from a large sample of secondary-school self-harmers said they had wanted to die.<sup>34</sup> In a population-based study of young adults, however, few episodes of self-harm (mainly overdosing and cutting) involved suicidal intent.<sup>11</sup>

Intentions behind superficial self-mutilation (such as self-cutting) differ from those for self-poisoning.<sup>34</sup> In adolescent patients’ spontaneous accounts, the most common reasons given were escape (for self-poisoning) and depression (for self-cutting).<sup>34</sup> Half the female cutters wanted to punish themselves. Reported motivations for adult superficial self-mutilation included: to relieve tension, to provide distraction from painful feelings, as self-punishment, to decrease dissociative symptoms, to block upsetting memories, and to communicate distress to others.<sup>17</sup>

The complexity and mix of intentions behind any act of self-harm should always be kept in mind. Most studies of “attempted suicide” have included behaviours that were engaged in for various reasons.

### Rates of self-harm

Self-harm in the form of cutting has been described since ancient times,<sup>16</sup> but taking an overdose of medication has emerged since the huge growth in pharmaceutical products, many of which are relatively safe in overdose.<sup>2</sup> A cohort analysis,<sup>41</sup> prompted by a rise in self-harm admission rates in the UK in the 1960s showed rates of self-harm increasing in successive birth cohorts. These results prompted gloomy predictions about the future, which eventually proved to be unduly pessimistic.<sup>7</sup> An American birth-cohort analysis showed much higher odds for self-harm in people from more recent birth-cohorts.<sup>42</sup> In the 13-country WHO/EURO study of parasuicide, there were huge differences in age-standardised rates of self-harm, with low rates in southern European areas and high rates in the north of Europe.<sup>8</sup>

A nine-country study of self-harm rates from community household surveys that had used similar criteria also showed great variations between countries in lifetime prevalence, ranging from less than 1% in Beirut and Taiwan to nearly 6% in Puerto Rico.<sup>43</sup> High rates of self-harm have been reported in indigenous people in some colonised countries.<sup>11,44,45</sup>

Immigrants from the Indian subcontinent have been over-represented in populations of self-harmers in several countries.<sup>46–48</sup> These findings reflect the high rates of completed suicide in this group of immigrants,<sup>49</sup> although the ethnic mix of the neighbourhoods in which the studies were done could also be relevant.<sup>50</sup> In the USA, African Americans (especially women)<sup>51</sup> are at lower risk of self-harm than are other groups in the country.

Whereas completed suicide is rare in adolescents, self-harm is common in young people and studies in the general population have inquired more comprehensively about these behaviours. Between 5–9% of Australian,<sup>10</sup> US,<sup>52</sup> and English<sup>13</sup> adolescents reported having self-harmed in the previous year, with few episodes seeming to be true suicide attempts. Of concern, however, is the fact that the proportion of suicide attempts in US high-school students that were medically serious increased during the 1990s.<sup>53</sup> Lifetime self-harm in adolescents stood at 13% in the English sample<sup>13</sup> and at 30% in an Australian school sample.<sup>54</sup>

Superficial self-mutilation seems to be rife in young people, with one-fifth of Turkish high-school students<sup>12</sup> and as many as one-third of Massachusetts undergraduate psychology students<sup>14</sup> and female Canadian undergraduates<sup>55</sup> reporting such behaviours.

Prevailing beliefs have been that self-mutilation occurs mainly in women and is repetitive. However, these behaviours may actually be just as common in men<sup>14,15,17</sup> and they may be transient.<sup>13,18</sup> They are also much less rare in adults than has been thought.<sup>11,15,17</sup>

### Risk factors and protective factors

A wide range of risk factors for self-harm has been identified. Less explored but also important are protective factors; these are not simply the inverse of risk factors, but they may usefully be described in parallel. Risk and protective factors for self-harm are shown in panel 2. Many of these factors also apply for completed suicide, but of course not all factors will be relevant for all groups of people who have self-harmed.

### Demographic profile

Self-harmers seem to have a different demographic profile to people who commit suicide.

#### Age

Self-harm is rare before puberty and becomes more common through adolescence, with the most common age for first onset of self-harm at about 16 years in the USA.<sup>42</sup> The greatest risk for hospital presentations in the WHO/EURO Study<sup>8</sup> was in women aged 15–24 years and men aged 25–34 years. Older people are at much lower risk, and when they do self-harm they are much more likely to commit suicide later.<sup>56</sup>

#### Sex

Whereas being male is an important risk factor for suicide, presentations of self-harm to health agencies are generally more common in women.<sup>8</sup> There is some evidence that the higher rate of self-harm in girls than boys is attributable to other risk factors such as depressed mood, disordered eating, and romantic involvement. Girls were more likely to report having a current or past boyfriend.<sup>57</sup> Self-mutilation may be equally as common in men as it is in women.<sup>14,15,17</sup>

**Panel 2: Broad risk and protective factors for self-harm****Demographic profile***Examples of risk factors*

- Youth
- Female sex
- Socioeconomic disadvantage
- Homosexual or bisexual orientation

**Social and family environment***Examples of risk factors*

- Adverse childhood environment and experiences
- Interpersonal difficulties in adolescence

*Protective factors*

- Social support and family activities
- Religious affiliation
- Cultural norms

**Psychiatric disorders***Examples of risk factors*

- Depression
- Substance abuse
- Anxiety disorder
- Personality disorder

*Protective factors*

- Lithium for people with bipolar disorder

**Psychological characteristics***Examples of risk factors*

- Impulsivity, poor problem-solving
- An over-general autobiographical memory

*Protective factors*

- Optimistic outlook

**Neurobiological and genetic aspects***Example*

- Inherited vulnerability of serotonin system

**Situational factors***Examples*

- Adverse life events
- Media influence
- Awareness of self-harm of others
- Intoxication

**Physical illness***Examples*

- Epilepsy
- HIV infection

**Marital status**

In a multivariate model, the risk of self-harm was reported to be 11 times higher for separated and divorced people than for those not in this category.<sup>58</sup>

**Employment status**

Uncertainty remains about how much of the risk of self-harm in the unemployed is explainable in terms of selection.<sup>59</sup> Risks of self-harm and suicide may be raised

in people or communities with precarious employment situations.<sup>59</sup>

**Socioeconomic disadvantage**

Low socioeconomic status, a low level of education, low incomes, and living in poverty are all risk factors for self-harm.<sup>8,60,61</sup> Self-harm admission rates are higher in areas of socioeconomic deprivation.<sup>62</sup> In a longitudinal study,<sup>63</sup> childhood socioeconomic disadvantage continued to predict self-harm independent of later mental-health problems and stressful life events.

**Social and family factors***Family characteristics and childhood experiences*

Results of longitudinal studies show the association between family environment during childhood and self-harm in adolescence and early adulthood.<sup>63–65</sup> Risk is greater for children of separated or divorced parents, in families where there was marital discord,<sup>61</sup> or where the mother was very young or poorly educated.<sup>66</sup> Parental psychopathology is also a risk factor.<sup>67</sup> Children who inherit biological vulnerability to affective disorders and substance abuse could also be more likely to be growing up in a home that is dysfunctional.<sup>67</sup> In a retrospective cohort study of adults in a health maintenance organisation, risk of self-harm increased with higher scores for adverse childhood experiences including emotional, physical, and sexual abuse and other household problems such as the mother being battered.<sup>68</sup> Since adverse experiences tend to cluster, the most crucial risk factors can be difficult to isolate. Nevertheless, childhood sexual abuse has repeatedly emerged as a risk factor for self-harm,<sup>69,70</sup> possibly having its effect mainly through increasing vulnerability to adolescent mental disorder and to life events.<sup>63</sup>

A two-generational study of self-harm patients showed strong familial transmission of early-onset self-harm, usually in the context of mood disorder in the offspring, but also related to family transmission of sexual abuse and increased impulsive aggression in offspring (see Neurobiological and genetic aspects).<sup>71</sup>

Maladaptive parenting and childhood maltreatment may increase the risk of self-harm because these factors lead to severe interpersonal difficulties in adolescence, resulting in difficulty in developing the social skills needed for healthy relationships.<sup>65</sup> Attachment to peers, however, did not confer protection against self-harm.<sup>63</sup> Good communication with family members and involvement in family activities are protective.<sup>72</sup>

**Social isolation and support**

In a Swedish study,<sup>73</sup> few people who self-harmed had well functioning relationships. When asked what helped them to not contemplate suicide, a group of psychiatric patients mentioned confiding in family and friends or having contact with psychiatric services, but only half the

patients had done so when at their worst.<sup>74</sup> Social support also moderates the risk of self-harm in people facing acculturation stress.<sup>75</sup>

#### **Religion**

A quarter of psychiatric patients in one study<sup>74</sup> said that their religious beliefs prevented them from attempting suicide. Moral objections were clearly a factor for depressed patients who had not self-harmed, compared with those who had.<sup>76</sup> In an Australian twin study, people reporting a Roman Catholic affiliation were less likely to have made a serious suicide attempt.<sup>77</sup> American psychiatric patients with religious affiliations, irrespective of denomination, showed less self-harm than those reporting no affiliation.<sup>78</sup>

#### **Societal factors**

As with suicide, rates of self-harm vary so widely between different societies<sup>8,43</sup> that the differences cannot be explained away. Exactly what is protective about some societies is not known, but strong disapproval of suicide in some Catholic and Islamic countries is probably a factor and would be likely to extend to self-harm as well.

Eckersley<sup>79</sup> has pointed to the mass-media culture of many Western societies that is “marked by frenetic fashions and polarisation between destructive recklessness and abandon, and a more insidiously debilitating cautiousness, social withdrawal and self-centredness”. He links this culture with a range of psychosocial problems, including suicide, in young people. Some of the self-harm seen in rural China and Sri Lanka has been attributed to a different cultural stress—the predicament of young women unable to cope with traditional ways of handling conflict within the family.<sup>38,39</sup>

#### **Sexual orientation**

Men and women with gay, lesbian, or bisexual orientation are more likely to self-harm than are heterosexuals,<sup>80,81</sup> although there have been conflicting results for teenage girls.<sup>82,83</sup> The risk might be greater for homosexual men than for homosexual women.<sup>80</sup> In young New Zealanders, increasing degrees of same-sex attraction was predictive of higher risks of self-harm.<sup>80</sup> High risks have been identified in men who described their orientation as bisexual,<sup>81</sup> or who had experienced only minor same-sex attraction.<sup>80</sup> In a longitudinal study of Norwegian youth, gay, lesbian, or bisexual attraction, identity, and behaviour were associated with self-harm; however, only same-sex behaviour emerged as a significant predictor after logistic regression analysis.<sup>83</sup> The risk in gay, lesbian, or bisexual youth could not be attributed to their greater exposure to a wide range of risk factors, including depressed mood, substance abuse, pubertal timing, or atypical sex roles.<sup>83</sup> However, victimisation in these groups, which may be important,<sup>84</sup> was not assessed. Most self-harm occurred after or

around the time that participants realised that they were not exclusively heterosexual.<sup>83</sup>

#### **Psychiatric illness and its treatment**

Studies of self-harmers who present to hospitals that used standard diagnostic criteria have shown that more than 90% of these people had at least one psychiatric disorder, most commonly depression, followed by substance abuse and anxiety disorders.<sup>21,85</sup> Comorbidity was also extremely common. Curiously, few patients were diagnosed with adjustment disorders, although such patients may self-harm and present to emergency units.<sup>86,87</sup> An explanation could be that patients who, in clinical practice, are recognised as being in crisis rather than ill, are over-diagnosed by use of a structured interview schedule, even though the extent of documented past psychiatric disorder was thought to indicate that the disorders were indeed present.<sup>21</sup>

Those who self-harm may be more ill now than in the past; a comparison of two cohorts in Pennsylvania showed more depression and illicit drug use and greater suicidal intent in the more recent cohort.<sup>88</sup>

Even in a general population sample, where few self-harm episodes involved suicidal intent, psychiatric disorders were common, including in people who were engaged in non-suicidal behaviours such as self-battery.<sup>89</sup>

While depression is a well-known antecedent of self-harm, “externalising” psychopathology such as anti-social behaviour and substance dependence may be under-recognised.<sup>90</sup> Personality disorders are also widespread in those who have self-harmed, often as a comorbid condition.<sup>21</sup> Self-mutilators are often assumed to have personality disorders, in particular borderline personality disorder, but not enough is known about self-mutilation in the general population for this association to be established. A third of a sample of general psychiatric outpatients reported self-mutilation when asked.<sup>91</sup> Samples of self-mutilators have included many people with eating disorders and substance-abuse problems, but also people with post-traumatic stress disorder (PTSD), schizophrenia, and other psychiatric illnesses.<sup>23,24,91</sup>

A combination of behaviours including self-mutilation, substance abuse, and abnormal eating, often with a history of childhood sexual abuse has been called a “trauma re-enactment syndrome”, with women seen as doing to their bodies something that represents what was done to them in childhood.<sup>92</sup> Nevertheless, most people who were sexually abused as children do not self-harm,<sup>69</sup> and self-mutilation is not confined to women. There seem to be links between childhood abuse, being assaulted as an adult, depression, PTSD, cluster B personality disorder, and self-harm which are beginning to be clarified,<sup>70,93</sup> but are not yet fully understood.

Since affective disorders are major risk factors for self-harm and suicide, effective treatments for these disorders might be expected to protect against self-harm

in people subject to recurrent depression. This effect was shown for people with bipolar disorder taking lithium, although the study was small.<sup>94</sup> Lithium may even have a specific anti-suicide effect.<sup>95</sup>

Likewise, effective treatment for schizophrenia might reduce self-harm in this at-risk group. A study that compared clozapine with olanzapine noted less self-harm in the clozapine group, but there were actually more suicides in the clozapine group (although this difference was not statistically significant).<sup>96</sup> How common self-harm would have been in an untreated group is not known.

Controversy surrounds the possibility that selective serotonin re-uptake inhibitors (SSRIs) increase the risk of suicide and self-harm. Two recent studies that used the General Practice Research Database provided no evidence of such risk in adults who were prescribed SSRIs compared with those prescribed tricyclic antidepressants.<sup>97,98</sup> There was, however, weak evidence of a higher risk of self-harm for people younger than 19 years who were prescribed SSRIs.<sup>98</sup>

### Psychological aspects

In addition to conscious intentions for self-harm, there may be other, less conscious processes at work that put people at risk of self-harm—rage toward others or self; feelings of abandonment, guilt, or desperation;<sup>99</sup> and ambivalence that may be reflected in an avowed wish to die that does not translate into a lethal act. Self-harm may be symbolic (figure 2).<sup>100</sup> The capacity to bear painful feelings without regressing to a more primitive state of mind may be protective.<sup>99</sup>

More amenable to scientific inquiry are measurable psychological variables that may modify vulnerability to self-harm. These factors contribute to poor problem-solving skills, a well-recognised feature of self-harmers.<sup>35</sup> Impaired decision-making has also recently been described.<sup>101</sup> Problem solving can be more difficult in the face of impulsivity, inflexible thinking, hopelessness,<sup>35</sup> reluctance to self-disclose,<sup>102</sup> lack of positive future-directed thinking,<sup>103</sup> and difficulties with autobiographical memory manifested by a tendency to retrieve events from the past in an “over-general” way rather than by recalling specific events.<sup>35</sup> Whether variables being assessed are enduring personality traits or are dependent on a person’s current state is important. Personality traits of neuroticism and novelty-seeking predicted self-harm in adolescents in a birth cohort.<sup>63</sup> Self-mutilation is one of the diagnostic criteria for borderline personality disorder. Dissociation may be a risk factor for self-mutilation in patients with and without borderline personality disorder,<sup>91</sup> and emerged as a risk factor for self-harm in Turkish high-school students.<sup>12</sup>

Characteristics that buffer the effect of an event may protect against self-harm. A more optimistic outlook, for example, may modify hopelessness.<sup>76</sup>

### Neurobiological and genetic aspects

Neurobiological abnormalities underlie some of the psychiatric and psychological disturbances associated with self-harm, and some seem to be independently associated with suicide and self-harm as well as with depression.<sup>104</sup> Low concentrations of 5-HIAA, a serotonin metabolite, have been found in the cerebrospinal fluid of people from several groups who have harmed themselves; these low concentrations may predict future self-harm and violence.<sup>105</sup> Blunted fenfluramine-stimulated prolactin release, another index of altered serotonergic function, has been related to the seriousness of self-harm.<sup>105</sup> Functional neuroimaging has indicated decreased binding potential of prefrontal 5-HT<sub>2A</sub> receptors in patients who have self-harmed.<sup>106</sup>

Twin and adoption studies show that the familial risk for suicide observed in controlled family studies is likely to be at least partly genetic.<sup>107</sup> Results from studies of self-harm have not been as conclusive, probably because of the heterogeneity of this group.<sup>107</sup> Uncertainty remains about how much of the link is truly independent of affective illness.<sup>107</sup> Transmission of impulsive aggression may contribute.<sup>104</sup>

Molecular geneticists have sought candidate genes, with recent attention on the serotonin transporter gene promoter (5-HTTLPR)<sup>108</sup> among others.<sup>109</sup> Results of a meta-analysis showed no association between



Figure 2: Scars from self-harm

The patient remarked that “the invisible scars on the inside are worse”.

5-HTTLPR polymorphisms and self-harm and suicide combined, but they did show that in patients with the same psychiatric diagnosis, genotypes carrying the s allele were more frequent in those who had self-harmed.<sup>108</sup>

Results of a longitudinal study showed an interaction between 5-HTTLPR polymorphisms and life stress for depression and self-harm.<sup>110</sup> Stressful life events predicted suicidal ideation or self-harm as well as depression in people carrying an s allele but not among l/l homozygotes. Intermediate or endo-phenotypes related to serotonin function (eg, anxiety, impulsivity, or aggression) might contribute to vulnerability both to psychiatric disorders such as depression and to self-harm.<sup>104,108</sup>

#### Physical illness

Physical illness is associated with self-harm,<sup>111</sup> particularly in elderly people.<sup>111</sup> People with epilepsy are over-represented in self-harm populations.<sup>112</sup> Increased risk of self-harm has also been noted in the first few months after a positive test for HIV infection, and also at later stages.<sup>113</sup> Past head-injury has been associated with increased risk of self-harm in psychiatric patients.<sup>114</sup>

#### Situational factors

An adverse life event, especially one involving interpersonal conflict or a relationship breakdown, could trigger self-harm in a vulnerable person.<sup>31,115</sup> Even the death of Diana, Princess of Wales, was followed by increased rates of self-harm in the following week.<sup>116</sup> Clustering of self-harm has been described in young people,<sup>117</sup> suggesting the existence of contagion, which has been observed with self-mutilation in adolescents.<sup>118</sup> Awareness of peers who had self-harmed was a strong risk factor in a school-based study.<sup>13</sup> Although much debate surrounds the possible role played by the media in facilitating self-harm, there is sound evidence for a connection.<sup>119</sup>

Availability of means for self-harm may contribute to someone acting on impulse or taking a larger overdose. In the year after legislation to reduce pack sizes for analgesics in the UK, the number of paracetamol overdoses dropped,<sup>120,121</sup> especially the number of severe overdoses.<sup>120</sup> Reductions in the sizes of overdoses of paracetamol and salicylates persisted for 2 years after changes to pack sizes.<sup>121</sup> Much self-harm occurs while the person is intoxicated.<sup>122</sup> Alcohol may acutely increase the risk of self-harm via several mechanisms.<sup>122</sup>

#### Risk factors: pulling the strands together

Although for some people there will be a single overwhelming feature such as agitated depression, that leads to self-harm, risk factors and protective factors are often interlinked. A child born into a family in which there is both inherited and acquired adversity—in the form of familial psychiatric disorders, impulsive or

aggressive personality traits, and traumatic childhood experiences—carries many vulnerabilities into adolescence. The same person is then likely to have difficulty forming healthy relationships in adolescence and could experience depression or substance abuse. A young person in these circumstances might then self-harm when life stresses overwhelm their capacity to cope, especially if this is behaviour they are aware of through peers or the media. On the other hand, cultural and social supports might offer some protection against self-harm, even in the face of many adversities.

#### Repetition, suicide, and other premature death

About 15% of self-harmers seen at a hospital will present again within a year,<sup>123</sup> and even more will repeat without presenting.<sup>124</sup> After 9 years, more than 5% will have committed suicide.<sup>123</sup> An increased number of deaths in self-harm populations is not due solely to raised rates of suicide; researchers in a Helsinki study noted a death rate of 15% after an average of 5·3 years follow-up, but fewer than half of the deaths were suicides.<sup>125</sup> Deaths of undetermined cause accounted for a small percentage, but there were also deaths due to homicide, accidents, and disease. Alcohol dependence or abuse was mentioned on a third of all death certificates in the study. Thus, although suicide is the most common cause of premature death in self-harmers, there is also a heavy burden of other mortality, which may be partly attributable to low socioeconomic status and also to the risk of premature death associated with psychiatric illness.<sup>125</sup> A birth-cohort analysis revealed that suicide and other causes of premature death had common risk-factors, including emotional instability, conduct problems, and childhood enuresis.<sup>126</sup>

Self-harm is a strong predictor of suicide, with the risk being at its highest in the first 6 months after a harming episode,<sup>127</sup> but it persists for many decades.<sup>3</sup> Male sex, older age, and multiple episodes of self-harm have been identified as predictors of a later suicide.<sup>128</sup> In another study, independent predictors of risk in a multivariate model were: not living with a close relative,

#### Panel 3: Risk factors for suicide after self-harm

- Older age
- Male sex
- Past psychiatric care
- Psychiatric disorder
- Social isolation
- Repeated self-harm
- Avoiding discovery at time of self-harm
- Medically severe self-harm
- Strong suicidal intent
- Substance misuse (especially in young people)
- Hopelessness
- Poor physical health

**Panel 4: Guidelines for assessment of patients after self-harm**

**Features of the episode**

- Events leading to self-harm
- Circumstances—eg, whether alone at the time, whether informed anyone, or whether made arrangements to avoid discovery
- Intentions, especially suicidal intent
- Lethality (but also consider patient's beliefs about lethality)

**Mental health issues**

- Previous self-harm
- Psychiatric illness
- Personality disorder
- Substance abuse
- Psychosocial problems

**Background**

- Physical health
- Past psychiatric history
- Family and personal history

**Social circumstances**

- Living circumstances
- Social support network
- Coping strategies

**The future**

- Attitude to being alive after self-harm
- Attitude to care and to use of helping agencies
- Hopelessness
- Future-oriented thinking
- Risk of suicide or of repeated self-harm

**Information from others**

- Family, friends, family practitioner, or counsellor

avoiding discovery at the time of self-harm, and (in people under the age of 35 years) current alcohol misuse.<sup>127</sup> In young people, another important predictor was previous psychiatric inpatient treatment.<sup>129</sup> A list of risk factors for suicide after self-harm is shown in panel 3.

Many risk factors have been identified for non-fatal repetition of self-harm, especially present and past psychiatric diagnoses, including schizophrenia and affective psychosis as well as non-psychotic depression and substance abuse.<sup>130–133</sup> Grand self-harmers (ie, people with five or more self-harm episodes) are more likely to be male.<sup>133</sup> The possibility of so-called kindling or behavioural sensitisation has been raised—ie, that less stress is required to trigger successive episodes of increasingly severe or lethal self-harm. This theory was not supported by results from a US Army Medical Centre Study,<sup>134</sup> but in Australia, increasing severity of previous overdoses was noted in people who later committed suicide (although stressors were not measured).<sup>135</sup>

In adolescent inpatients, self-mutilation was noted to be both internally and socially reinforcing, possibly serving functions of aiding escape from negative experiences (eg, hopelessness) or generating feelings in place of emptiness, as well as social functions.<sup>136</sup> Indirect evidence of the tension-reducing<sup>137</sup> and mood-regulating<sup>20</sup> qualities of self-mutilation has been reported. All these factors could contribute to the propensity for self-harm to become habitual.

**Assessment**

Once patient safety and the medical effects of self-harm have been addressed, and the patient's level of consciousness is satisfactory, the next task is the psychosocial assessment.<sup>138</sup> Guidelines are shown in panel 4.

Policies about who should do hospital assessments vary between settings.<sup>139,140</sup> The assessor should at least have received specific training and have access to support from a psychiatrist. Establishing rapport is essential. Assessment of future suicide risk is best attempted after some trust has been established. The features of high suicide risk (panel 3) should be considered, but with an awareness that risk assessments can be inaccurate even when done by experienced workers. Checklists cannot replace clinical judgment, but likewise, assurances of safety should not blind the assessor to major risk factors.

Assessment outside the hospital should be done with the same approach. In New Zealand, young adults presenting after self-harm (including self-mutilation) to family practitioners, psychologists, and counsellors (rather than to hospital) rated these three sources of help favourably.<sup>141</sup> When the behaviour is self-mutilation, health professionals should guard against a first reaction of horror.<sup>16</sup> Instead, assessment should work towards identifying the functions of the behaviour in a non-judgmental way.<sup>136</sup>

Even in countries with clear guidelines for hospital assessment after self-harm, there is huge variation in the proportion of people who are actually assessed.<sup>142</sup> In Oxford, UK, people not assessed were more likely to have been “difficult”, to have presented at night, to have injured rather than poisoned themselves, and to have previously self-harmed.<sup>143</sup> Many had discharged themselves. Another study of patients who had discharged themselves,<sup>144</sup> noted less frequent history of previous self-harm or contact with psychiatric services. There are conflicting reports as to whether people who are assessed are actually less likely to self-harm again than are those who slip through the net.<sup>143,145</sup>

**Management**

Self-harm is a behaviour, not an illness. Thus, management is highly dependent on the underlying problems, which could range from psychosis with intense continuing suicidal urges requiring psychiatric

**Panel 5: General principles of care after self-harm**

- Monitor patient for further suicidal or self-harm thoughts
- Identify support available in a crisis
- Come to a shared understanding of the meaning of the behaviour and the patient's needs
- Treat psychiatric illness vigorously
- Attend to substance abuse
- Help patient to identify and work towards solving problems
- Enlist support of family and friends where possible
- Encourage adaptive expression of emotion
- Avoid prescribing quantities of medication that could be lethal in overdose
- Assertive follow-up in an empathic relationship
- Affirm the values of hope and of caring for oneself

admission, to an impulsive over-reaction to a stressful event that rapidly resolves with family support. Psychiatric admission rates following self-harm vary. Only 3% of self-harmers at six English hospitals were admitted for psychiatric reasons,<sup>146</sup> compared with 23% in Madrid.<sup>147</sup> Most patients will not require admission and for some, admission is counterproductive.<sup>148</sup>

For most patients who do not need to be admitted, there has been an extended quest for a practicable treatment to reduce the repetition rate of self-harm. The target has so far proved elusive. In a Cochrane review,<sup>149</sup> pooled trials of problem-solving therapy and of a "green card" to allow emergency contact did not show any significant reduction in repetition rates. In two small trials with positive results, depot flupenthixol was given to recurrent repeaters, and dialectical behaviour therapy (DBT) provided for women with borderline personality disorder and who had recurrent episodes of self-harm.<sup>149</sup> The main shortcoming of all the trials was low statistical power. Additionally, the usual treatment was often not defined, and most repetition rates were based on hospital presentations only.<sup>149</sup>

Results from another larger emergency card study also showed that these cards had no overall effect on self-harm repetition rates.<sup>150</sup> Likewise, repetition rates are not improved by brief cognitive therapy plus booklet,<sup>151</sup> planned telephone contact,<sup>152</sup> or an invitation from the family practitioner (with provision of management guidelines).<sup>153</sup>

Modest evidence to support a psychodynamic approach has emerged. Brief psychodynamic interpersonal therapy has produced some reduction in repetition of self-harm episodes<sup>124</sup> and psychoanalytically oriented part hospitalisation for patients with borderline personality disorder has resulted in persistent reductions in both self-mutilation and suicide attempts.<sup>154</sup> For women with borderline personality disorder, the value of dialectical behaviour therapy has been confirmed.<sup>155</sup> Effective

treatments for young people are badly needed, but the evidence-base remains scarce.<sup>156,157</sup>

The goal of one treatment for all—or even one treatment for all repeaters—was probably never realistic.<sup>139,158</sup> That may be why it is so difficult to improve on treatment as usual, which, for all its faults and lack of evidence-base, at least has the virtue of being individualised. A helpful way forward might be to explore treatments in specific subgroups,<sup>158,159</sup> as was done with patients with borderline personality disorder.<sup>154,155</sup>

A common ingredient in aftercare is likely to be the development of a trusting relationship with a therapist who is willing to work within the patient's world view.<sup>150</sup> Some general principles of care are outlined in panel 5, and include vigorous treatment of psychiatric disorders. For repetitive self-harmers, attending to the function served by the behaviour could be crucial.<sup>136</sup> People who have self-harmed are notoriously difficult to follow up, but many do consult their family practitioner in the week following self-harm.<sup>160</sup> Guidelines for family practitioners have been suggested by Bennewith and colleagues.<sup>153</sup> With regard to outcome measures other than repetition of self-harm, a meta-analysis showed alleviation of depression, hopelessness, and other problems in patients receiving problem-solving treatment.<sup>161</sup> Although the most important outcome is suicide, most studies have been too small to provide useful results.

In a study of suicide after admission for a depressive or suicidal state,<sup>162</sup> patients who refused post-discharge follow-up were randomly assigned to no contact, or to a series of friendly letters over the next 5 years. A quarter of patients wrote grateful letters back. A significant reduction in suicidal deaths in patients who were sent letters was observed in the first 2 years and slowly attenuated. The notion of a long-term lifeline,<sup>150</sup> which this study may have tapped into, warrants further exploration.

**Future prospects**

The term self-harm covers a spectrum of behaviour. The most serious forms relate closely to suicide, while behaviours at the milder end of the spectrum merge with other reactions to emotional pain. If we better understood the functions served by self-harming behaviours, we might be able to move beyond the simple, although important, concept of suicidal thoughts progressing to an attempt and then to completed suicide. If crossing the border from thoughts to acts does pave the way for further acts, more effort is needed to foster non-harmful ways of dealing with emotional pain.

Human beings are highly responsive to cultural and social norms, and this aspect of the prevention of suicide and self-harm has been neglected. People who are judged to be vulnerable by virtue of having several risk factors

could be protected by the society they live in or by the beliefs of their culture or religion. The WHO's multiple intervention study of suicidal behaviours (SUPREMISS)<sup>163</sup> should address some of these factors, since it is being conducted across a range of cultures and includes self-harm not presenting to emergency departments. The study should also give us more information on the neurobiological underpinnings of self-harm and suicide. Only very large studies of long duration will be able to provide definitive answers about which interventions work for which people, particularly in relation to suicide, the most important outcome measure.

#### Conflict of interest statement

I declare that I have no conflict of interest.

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