Suicide 1

Self-harm and suicide in adolescents

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Self-harm and suicide are major public health problems in adolescents, with rates of self-harm being high in the teenage years and suicide being the second most common cause of death in young people worldwide. Important contributors to self-harm and suicide include genetic vulnerability and psychiatric, psychological, familial, social, and cultural factors. The effects of media and contagion are also important, with the internet having an important contemporary role. Prevention of self-harm and suicide needs both universal measures aimed at young people in general and targeted initiatives focused on high-risk groups. There is little evidence of effectiveness of either psychosocial or pharmacological treatment, with particular controversy surrounding the usefulness of antidepressants. Restriction of access to means for suicide is important. Major challenges include the development of greater understanding of the factors that contribute to self-harm and suicide in young people, especially mechanisms underlying contagion and the effect of new media. The identification of successful prevention initiatives aimed at young people and those at especially high risk, and the establishment of effective treatments for those who self-harm, are paramount needs.

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Introduction

Adolescent self-harm is a major public health concern. Although suicide is uncommon in adolescents compared with non-fatal self-harm, it is always a tragic outcome, and prevention of suicide in young people is understandably a focus of national strategies for suicide prevention. In this paper, we discuss self-harm and suicide in adolescents in terms of epidemiology (especially international differences); developmental aspects of self-harm, including short-term and long-term outcomes; factors that contribute to the behaviour; and treatment and prevention. This is a selective paper directed at any professional with an interest in adolescent suicide and self-harm. We have two aims: to provide a synthesis of the evidence for adolescent self-harm and suicide and to identify key areas of uncertainty.

Only a small proportion of individuals who self-harm present to hospitals, meaning that this behaviour is largely hidden (at least from clinical services) at the community level (figure 1).

There is no agreed definition of adolescence—chronological age is just one of several ways it can be defined (as opposed to physical characteristics or cognitive development). The upper age limit used to define adolescence in studies varies between 18 years and 25 years. As a result, some of the findings we present in this paper will include those for individuals older than 18 years.

Self-harm

Self-harm refers to intentional self-poisoning or self-injury, irrespective of type of motive or the extent of suicidal intent.[1,2] It is used here in preference to the dichotomous separation of such acts into non-suicidal self-injury (proposed as a new diagnosis for the Diagnostic and Statistical Manual of Mental Disorders, fifth edition) and attempted suicide—now popular in the USA—because suicidal intent is a dimensional phenomenon, the patient's and clinician's view of suicidal intent might differ, and national clinical guidelines focus on self-harm.[1]

However, in view of the inconsistent use of terminology, we have whenever possible used terms that authors of the respective studies have used.

Epidemiology

Although international variation exists, findings from many community-based studies show that around 10% of adolescents report having self-harmed, of whom some will report some extent of suicidal intent underpinning their self-harm.[3–7] Such studies consistently show that self-harm is more common in female adolescents than it is in male adolescents.[3–5,8] Presentation to hospital occurs in only about one in eight adolescents who self-harm in the community, being more common in those who take overdoses.[4,5]

Rates of hospital-treated self-harm are also higher in female adolescents than they are in male adolescents.[2,9] Self-harm presentations become increasingly common from age 12 years onwards, particularly in girls, such that between ages 12 years and 15 years the girl-to-boy ratio is as high as five or six to one. There have been few studies of self-harm in individuals younger than 12 years, making the estimation of self-harm in children in the community impossible, but presentations to hospital after self-harm are rare in this age group. The sex ratio decreases with age
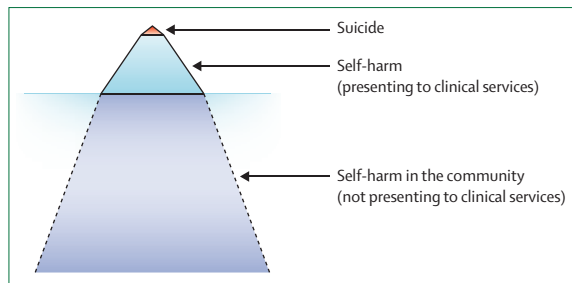
Figure 1: Representation of the relative prevalence self-harm and suicide in young people

in the later teenage years as the behaviour becomes increasingly common in boys and levels off in girls.[2,10] Self-harm rates are higher in adolescents from lower socioeconomic groups.[11] Judging from hospital statistics, self-harm has greatly increased in frequency in adolescents in the past few decades, with a major rise in presentations in the late 1960s and 1970s, and a further rise seen in female adolescents in the UK in the 1990s.[2] Why this increase has occurred is unclear, but greater availability of medication, increased stress facing adolescents, greater alcohol and drug consumption, and social transmission of the behaviour are possible contributory factors.

Methods of self-injury are heterogeneous, including acts such as self-cutting, jumping from heights and self-battery, with some authors also including non-recreational risk-taking. Self-cutting is the most common method of self-harm in adolescents in the community, as seen in the Child and Adolescent Self-harm in Europe (CASE) Study.[4,5] This finding contrasts with methods used by adolescents presenting to hospital after self-harm, in whom self-poisoning is by far the most common.[2,9] In some countries, particularly the UK, paracetamol (including compounds) is often used for self-poisoning.[2]

Why does self-harm increase rapidly during the early teenage years and why is the girl-to-boy sex ratio so high, especially around the age of 13–15 years? A survey that used a measure of pubertal stage in individuals aged 12–15 years in schools in Australia and the USA showed that the onset of self-harm was related to pubertal phase, especially late or completed puberty, rather than chronological age. This trend was especially pronounced in girls and for self-cutting. Other factors independently increasing the risk of self-harm were depressive symptoms, alcohol misuse, and onset of sexual activity.[12] The striking association of self-harm with puberty and affective symptoms might be related to emerging evidence of a period of particular neurodevelopmental vulnerability around this time, with increased risk of emotional disorders[13] and risk-taking behaviours. This vulnerability might be associated with particular developments in the cortical brain regions after puberty. Adolescents might also be more susceptible to negative social cues such as ostracism and the expectations of others.[14,15] The motivational explanations adolescents give

for self-harm vary widely and are often multiple. At the community level, individuals who self-harm by cutting differ somewhat from those who take overdoses, with suicidal intention more often indicated for self-poisoning, and self-punishment and tension relief for self-cutting.[16] Adolescents presenting to hospital after self-harm often attribute the act to suicidal intent, along with other motives, including escape from intolerable distress or situations, and a means of showing others how bad they feel.[17–19] Clinical staff, however, less often view the behaviour as being suicidal.[19] The high levels of suicidal intention reported by adolescents who self-harm in both community and hospital samples raises the question of how much their actions are caused by a true wish to die, or a wish to temporarily escape from an intolerable state of mind or situation.[18] This question draws attention to the need to better understand the meaning (or meanings) behind an act of self-harm or suicide.

Repetition of self-harm is common in adolescents. Of those who self-harmed in the year before being surveyed in the CASE Study (N=2410), more than half (55% of female adolescents and 53% of male adolescents) reported multiple events.[4] In a large sample (N=1583) of adolescents presenting to a general hospital in England, 15% re-presented to the same hospital after further self-harm within a year[2]—clearly an underestimate of all repeat episodes in view of the level of occurrence in the community and possible presentation to non-study hospitals. Repetition is more likely with self-cutting than with self-poisoning.[20] Depression, history of sexual abuse, exposure to self-harm, and concerns about sexual orientation are among the predictors of repetition.[21,22] It is useful to distinguish repeat acts that occur in relation to a phase of emotional distress from those that are part of a habitual pattern or are linked to a recurrence of emotional problems.

Factors associated with self-harm

Self-harm (and suicide) in adolescents are the end-products of a complex interplay between genetic, biological, psychiatric, psychological, social, and cultural factors (panel 1 and figure 2). Experts emphasise diathesis-stress explanations in theoretical formulations, specifically that predisposing biological (eg, serotonin imbalances), personality (eg, perfectionism, impulsivity), and cognitive vulnerabilities (eg, impaired social problem-solving) combine with exposure to negative life events, including both early and recent life adversity, and psychiatric disorders to increase risk of self-destructive behaviours across the lifespan.[23] There has also been growing focus on the functions of self-harm.[24] A further theoretical development has been the distinction between factors associated with the development of thoughts of self-harm or suicide (eg, feeling defeated and trapped) and those that increase the likelihood that such thoughts will be translated into actual suicidal behaviour (eg, impulsivity, exposure to self-harm by others).[6,25]

Child and family adversity, maladaptive parenting, and parental divorce are associated with self-harm.[21,26,27] Case-control studies reinforce the independent contribution of exposure to childhood adversity and serious suicide attempts in adolescence.[28] Child and adolescent sexual and physical abuse are also associated with self-harm during adolescence.[4,22]

Exposure to negative life events is a key factor associated with self-harm.[15,29] Additionally, individuals who self-harm report more stressful life events than those who experience self-destructive thoughts but do not act on them.[25] Indeed, interpersonal difficulties during adolescence (including difficulty making new friends, frequent arguments with adults in authority and peers, frequent cruelty toward peers, loneliness, and interpersonal isolation) are independent predictors of suicide attempts in late adolescence or early adulthood.[27] Cross-sectional and prospective school-based studies have drawn attention to the association between bullying and self-harm in both male and female adolescents.[3,5,22] However, more research into the mechanisms through which bullying increases the risk of self-harm is needed, as is research into the effect of different modes of bullying (eg, cyber-bullying *vs* face-to-face bullying) on young people's mental health.

Exposure to self-harm and suicide of others (family and friends) is associated with adolescent self-harm.[3,5,22] The self-harm of others probably provides a behavioural model for vulnerable individuals, thereby increasing the likelihood that thoughts of self-harm are acted on.[25] Also, vulnerable people might cluster together, thereby having shared stressors, and self-harm is their response to a shared stressful event rather than a modelling-type response.[30] Social transmission is especially important for self-cutting in girls.[20] Clinicians should ask a young person about their exposure to self-harm, especially if the young person reports self-destructive thoughts.[25]

Self-harm is associated with concerns about sexual orientation in both sexes.[22] In a New Zealand birth cohort studied to age 21 years, lesbian, gay, and bisexual (LGB) young people were six times more likely to have attempted suicide compared with heterosexual young people.[31] The authors of a systematic review[32] concluded that LGB individuals were four times more likely to attempt suicide in their life. Although age differences were not reported, more than 70% of the studies included in the review comprised people younger than 25 years. Possible mechanisms to account for the increased risk in LGB individuals include increased prevalence of mood disorders, substance misuse, victimisation, bullying, and social stress.[31,32] LGB young people might also have fewer protective factors than do heterosexual young people.[33]

Feelings of entrapment, defeat, lack of belonging, and perceiving oneself as a burden are recognised predictors of suicidal behaviour.[34,35] Less effective social problem-solving is a common aspect of adolescents who self-harm, but to what extent these deficits are confounded or mediated by depression is unclear.[36] There is growing evidence that

Panel 1: Risk factors for self-harm and suicide in adolescents

Sociodemographic and educational factors
- Sex (female for self-harm and male for suicide)—most countries*
- Low socioeconomic status*
- Lesbian, gay, bisexual, or transgender sexual orientation
- Restricted educational achievement*

Individual negative life events and family adversity
- Parental separation or divorce*
- Parental death*
- Adverse childhood experiences*
- History of physical or sexual abuse
- Parental mental disorder*
- Family history of suicidal behaviour*
- Marital or family discord
- Bullying
- Interpersonal difficulties*

Psychiatric and psychological factors
- Mental disorder*, especially depression, anxiety, attention deficit hyperactivity disorder
- Drug and alcohol misuse*
- Impulsivity
- Low self-esteem
- Poor social problem-solving
- Perfectionism
- Hopelessness*

All the factors in the panel have been shown to be related to self-harm. *Shown to be related to suicide.
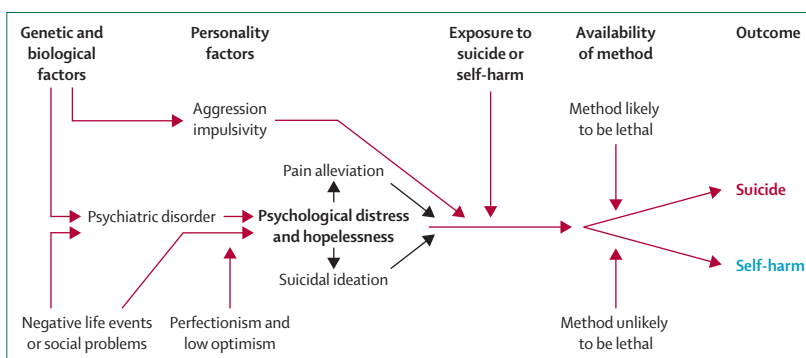

Figure 2: Key risk factors for adolescent self-harm and suicide

perfectionism and self-criticism are associated with self-harm in clinical and community populations.[15,18,37] One dimension of perfectionism, an individual's belief that others hold unrealistic expectations of them, needs particular attention because it can decrease the threshold above which negative life events lead to distress.[15] Low self-esteem,[22] social isolation,[32] impulsivity,[25] hopelessness,[18] and poor parent–child attachment[38] are also associated with self-harm in adolescents. Impulsivity can act as a link between childhood abuse and suicidal risk.[39] Optimism might buffer against self-harm, especially in girls.[22]

The prevalence of psychiatric disorders in young people who self-harm seems to be of similar magnitude

to that seen in adult populations. Thus prevalence figures of between 48%[40] and 87%[41] have been recorded in studies of young people presenting to general hospitals after self-harm. Depression, anxiety disorders, and substance misuse are most commonly described, although attention deficit hyperactivity disorder (ADHD) and conduct disorder are also common. An association seems to exist between ADHD, conduct disorders, and suicidal behaviour, which suggests that ADHD increases the risk of suicidal behaviour in male adolescents through its effect on the severity of comorbid disorders such as depression and conduct disorder.[42] Increased impulsivity and risk-taking might also contribute to the association.

Personality disorders, which are strongly associated with self-harm and suicide in adults, are customarily not diagnosed before the age of 18 years because of continuing developmental changes, but early diagnosis might be justified if there is clear evidence of pervasive and consistent symptoms. Follow-up studies of individuals diagnosed with borderline personality disorder before the age of 18 years show that they can develop a range of personality disorders. However, despite these prognostic uncertainties, an early diagnosis of personality disorder is commonly associated with self-injury in adolescents.[43]

Alcohol misuse is a risk factor for suicidal behaviour in adolescents. In a large community sample heavy episodic drinking, known as binge drinking, was associated with suicide attempts even after controlling for depressive symptoms.[44] This association was most pronounced in adolescents aged 13 years or younger. Drug use in adolescents who self-harm is not as well characterised. In community samples a higher frequency of self-harm was seen with all categories of drug use.[5] Also, 14% of 1331 adolescents presenting to a general hospital after self-harm reported misusing drugs, this being far more common in male than it was in female adolescents.[2] Adolescence is a period when both suicidal behaviour and substance misuse increase—poor impulse control is a risk factor for both.

Smoking is associated with self-harm in adolescents. In one study[45] of adolescents admitted to a psychiatric hospital, risk for suicide attempts in those who smoked was four times higher than for those who did not. Adolescents who smoked were also more likely to engage in non-suicidal self injury.[46] In community samples, regular smoking is associated with suicide attempts.[45] The association might result from a link between smoking and depression, or from smoking and self-harm, both being means of coping with underlying emotional distress. It might also show vulnerability to risk-taking behaviour. However, more research is needed to disentangle the extent to which lifestyle factors (eg, smoking, drinking) are secondary factors rather than direct risk factors for such behaviour.

Key risk factors for self-harm or suicide that clinicians should be aware of, especially in adolescents with psychiatric disorders, are a family history of suicide or self-harm, previous self-harm, contact with others engaging in self-harm, expressed suicidal intent, access to methods for self-harm or suicide, and lack of social support.

Outcome after self-harm

In most cases, self-harm behaviour in adolescence seems to cease by early adulthood, although it is more likely to persist in women than it is in men.[7] Persistence to adulthood is associated with repetition of self-harm over a lengthy time in adolescence. Adolescent self-harm might be a marker for risk of affective disorder in young adulthood.[47] Self-harm without expressed suicidal intent might be followed by acts with greater suicidal intent.[48]

Prospective studies show a substantial risk of suicide after adolescent self-harm that results in hospital presentation (eg, risk of suicide being at least ten times higher than expected),[49] although this risk is very low in those who are younger than 15 years and who self-harm.[50,51] Similarly, retrospective life-course studies show that early self-harm is not uncommon in those who die by suicide in late adolescence or early adulthood.[52] Risk of suicide after self-harm is more likely in male adolescents, individuals who have had psychiatric care (an indication of severity of psychiatric disorder), and those who repeatedly self-harm. Contrary to the beliefs of many clinicians, self-cutting, including at the last episode of self-harm in repeaters, is associated with greater risk of suicide than self-poisoning.[51]

Suicide
Epidemiology

Suicide in adolescence might be substantially under-recorded by authorities responsible for death verdicts, with possible suicides often being given undetermined or accidental verdicts.[53] Such under-reporting might be done to protect families from the perceived stigma of suicide. Thus national rates of suicide in young people should be compared with caution. Also, nationally recorded statistics are only usually available for comparison for individuals aged 10–24 years. Global figures for suicide in this age group show that it is the second most common cause of death after road-traffic accidents—it is the third most common cause of death in male adolescents (after road-traffic accidents and violence). Globally, suicide is the most common cause of death in female adolescents aged 15–19 years.[54]

Suicide is uncommon before 15 years of age (previously reported at 1·2 deaths per 100 000 boys aged 5–14 years) but increases in prevalence through adolescence (19·2 deaths per 100 000 male adolescents aged 15–24 years) and into adulthood (28·3 deaths per 100 000 men aged 25–34 years).[55] Officially, there are about 164 000 self-inflicted deaths worldwide each year in individuals younger than 25 years[54]—this number is probably a gross underestimate in view of the substantial misclassification of suicide in young people. In most

parts of the world, male adolescents are more likely to die by suicide than their female peers, with the suicide rate in male adolescents aged 15–19 years being 2·6 times that of female adolescents of the same age.[56] In some Asian countries, however, suicide is more common in young female individuals aged 15–24 years than it is in their male peers.[57] There is also much variability in prevalence of youth suicide worldwide, with high rates in countries including Russia, Ukraine, Japan, Lithuania, Finland, and Hungary, and much lower rates in the UK, Australia, USA, and Hong Kong (figure 3). In China, suicide rates (extrapolated from selected regions) are much higher in rural areas than in urban areas and female youth (aged 15–24 years) are more likely to die by suicide than their male peers. Global youth suicide rates have also changed in the past two decades. Thus, whereas rates increased from the 1960s through to the 1980s, they have declined since the 1990s, especially in male youth (aged 15–24 years).[58] Unfortunately, this trend is likely to reverse with the present worldwide economic recession.

Factors associated with suicide

Risk factors for completed suicide in children and adolescents share many similarities with those for self-harm (panel 1). Because research into adolescent suicide has focused on family origins of the behaviour and on psychiatric disorders, it is important to note that the absence of evidence for other risk factors should not be interpreted as evidence of absence. Factors that tend to be more youth-specific include restricted educational achievement, family history of suicidal behaviour, parental separation, divorce, or death, and social contagion.

Suicidal behaviour aggregates in families. Twin studies show a high concordance rate for suicidal behaviour in monozygotic (identical) compared with dizygotic (non-identical) twins. Even when relevant factors such as mood disorder, substance abuse, and trauma are controlled for, suicide in a monozygotic twin conveys a four-times greater risk of suicidal behaviour in the other twin.[59] An absence of a temporal relation between suicidal events,[59] however, suggests that this association in twins is not imitative in nature. Risk of suicide in first-degree relatives of those who have died by suicide is increased up to four times. Familial transmission of suicidal behaviour seems to be independent of the presence of mental illness, and transmission of aggression seems to be a major contributor.[60] This transmission of aggression is consistent with other findings that relate changes in serotonergic function to both impulsive aggression and suicidal behaviour.[61]

Poor family relationships seem to contribute to the transmission of suicidal behaviour, perhaps by compounding genetic vulnerability. Family discord was the most common precipitant of completed suicide in one study.[62] Traits such as impulsivity that increase the risk of suicidal behaviour can also impair parents' ability to provide an optimal environment.[63]

Psychological autopsy studies suggest that prevalence of mental disorder in adolescents who die by suicide is similar to that seen in adolescent patients who self-harm.[64] Affective disorders are most common. Psychiatric disorder seems to be particularly relevant in male adolescents, in whom suicidal behaviour relates to psychopathology at as early as 8 years of age.[65] The prevalence of substance abuse disorders varies between
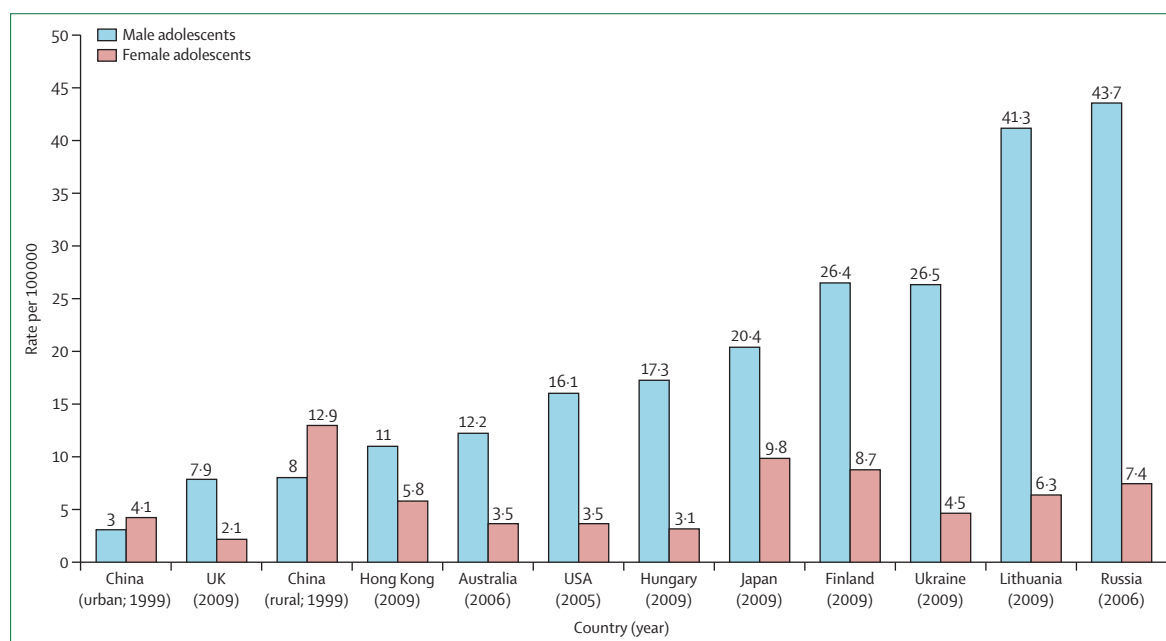

Figure 3: Suicide rates in individuals aged 15–24 years in selected countries

studies of suicides in young people. Many individuals, however, have problems related to alcohol and drug misuse.[66] Personality disorders have also been reported in more than a quarter of young people who die by suicide, with a further quarter having substantial trait accentuation not reaching the level of diagnosis.[66] Psychiatric disorders can be less relevant to completed suicide in some low-income and middle-income countries such as China, where high fatality rates result from access to lethal means, particularly availability of pesticides and a lack of adequate emergency medical facilities.[57]

Psychosocial stressors, especially relationship problems, are frequent precipitants for suicide in adolescents. This is likely to be particularly true in those younger than 14 years, in whom suicide often follows a brief period of stress, and psychiatric disorder is less common. Life chart approaches to investigating youth suicide suggest three groups: those with longstanding life and behavioural problems, school failure, family relationship problems, childhood sexual abuse, family violence, personality problems, low self-esteem, and poor peer relationships; those with major psychiatric disorder (including two subgroups—individuals with a protracted suicidal process and those with a brief suicidal process); and those in whom the suicidal process occurred as an acute response to life events.[52]

The reporting and portrayal of suicidal behaviour in the media can affect those exposed to such stimuli—an association with suicide and self-harm has been shown across a wide range of traditional media, especially those in which reporting is dramatic and includes details of the methods used.[67] As a result, guidelines for media reporting of suicide and self-harm have been developed to attenuate any detrimental effect. An important issue is the potential effect of new media. As younger people are more vulnerable to media influences and with the growth of pro-suicide websites, social media, and chat rooms (which can encourage suicide pacts), the potential impact on youth suicide and self-harm is considerable.[68] The challenge is in ensuring that new media provide support for vulnerable young people rather than helping or encouraging self-destructive behaviours. Online support groups and traditional crisis helplines can contribute to prevention but controlled studies are needed to show this.

Prevention of self-harm and suicide

Approaches to prevent self-harm and suicide can be divided into population-based measures, which are aimed at all young people (eg, educational initiatives), and measures aimed at high-risk groups (eg, individuals with a history of abuse, those who self-harm; panel 2).

Activities to prevent suicide and self-harm should take account of the particular characteristics of adolescent suicide and self-harm. For example, they should target issues around the social transmission of suicide and self-harm, address concerns about sexual orientation and bullying in young people, promote help-seeking behaviour, and foster self-esteem and resilience. School-based suicide prevention strategies are growing and include screening at-risk young people, gatekeeper training, skills training, and whole-school programmes.[69] Although there is some evidence that screening pro-grammes can identify at-risk young people not recognised by school professionals[70] and increase uptake of mental health services in untreated at-risk young people,[71] they have several limitations. Screening programmes place a substantial burden on schools and mental health providers because school screenings yield many false positives.[69] Also, because suicide risk fluctuates with time, a one-off screen will likely yield false negatives. Studies in this area have shown that asking adolescents about suicidal ideas does not increase risk of suicidality developing, rather the opposite.[72]

Gatekeeper training entails training peers and adults to better recognise warning signs for suicide. Some evidence exists that such training can improve knowledge and attitudes about suicide, increase help-seeking behaviour, and reduce self-harming in the short term (reduced suicide attempts were seen in one intervention that also had a screening component[73]). There is evidence from Scotland (although not exclusive to adolescents) that ensuring that such training becomes routine is associated with better knowledge about suicide in gatekeepers and increased community capacity.[74] Psychological skills training for school pupils has yielded promising findings in reducing suicidal ideation,[75] but some negative effects have also been reported (eg, increased anger and reduced school connectedness[76]). Whole-school approaches, which positively change the ethos and culture of a school in relation to psychological wellbeing, are likely to increase help-seeking, but there is no clear evidence of direct programme effects on the reduction of suicide.[69] More school-based approaches targeting adolescent self-harm are needed.

Panel 2: Approaches to prevent self-harm and suicide in adolescents

Population measures
- School-based psychological well-being and skills training programmes
- Gatekeeper training (eg, school teachers, peers)
- Screening to identify those who might be at risk
- Restriction of access to means used for self-harm and suicide
- Improved media reporting and portrayal of suicidal behaviour
- Encouragement of help-seeking behaviour
- Public awareness campaigns
- Help-lines
- Internet sources of help
- Reduction of stigma associated with mental health problems and help seeking

Measures for at-risk populations
- Psychosocial interventions for adolescents at risk of self-harm or suicide (eg, depressed adolescents, abused individuals, runaway children)
- Screening of those at risk (eg, young offenders)
- Psychosocial interventions for adolescents who have self-harmed
- Pharmacotherapeutic interventions for adolescents at risk of self-harm or suicide

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Restriction of access to means for suicide is a key suicide prevention strategy in adolescents, especially because of the often impulsive nature of the behaviour. One important example is limiting availability and safer storage of firearms within households in countries with high prevalence of suicide by shooting, with strong indications that presence of firearms in households increases risk of adolescent suicide and some evidence that restriction of their availability reduces this risk.[77] Another is safer storage of pesticides in rural areas of developing countries, where ready availability means that suicide by pesticide ingestion is common.[78] A further example is limiting pack sizes of drugs that are commonly used for self-poisoning in young people, such as paracetamol.[79] Crucially, restriction of access to a common dangerous method does not usually result in individuals immediately turning to another method.

Psychosocial interventions

In view of the fact that the crises associated with self-harm in adolescents can often resolve quite quickly, clinicians, especially family doctors, might initially provide supportive psychosocial care. Specific interventions will, however, be indicated in many cases, especially when problems are severe or longstanding and where self-harm is associated with use of more dangerous methods or clear suicidal intent. Considering the extent of self-harm in adolescents, there have been surprisingly few trials of psychosocial interventions in those who have self-harmed. Compared with control treatment, mostly treatment as usual, no differences in repetition of self-harm were seen for home-based family-problem-solving therapy (although families preferred this to the control treatment);[80] giving adolescents an emergency card that would allow them to re-admit themselves to a paediatric psychiatric inpatient unit if they were in crisis;[81] motivational interviewing to enhance engagement in therapy;[82] and brief psychological therapy.[83] Most trials, however, have been rather small, without the power to adequately test the effect of experimental treatment on repetition.

Results of an initial trial of group therapy for adolescents who repeatedly self-harm seemed promising in terms of reduced repetition of self-harm,[84] but two subsequent trials did not confirm this in relation to repetition or other outcomes.[85,86] Improvements in child and adolescent mental health care could have resulted in treatment-as-usual being more effective than it previously was.

Overall, there is a shortage of information on which to base treatment recommendations for adolescents who self-harm. There is much interest in the use of modified dialectical behaviour therapy—which has had promising results in adults with borderline personality disorder—to treat adolescents with repetitive self-harm and borderline traits.[87] Results of randomised trials are awaited. Encouraging results regarding self-harming behaviour were seen for multisystemic family-based therapy compared with psychiatric hospitalisation for suicidal individuals aged 10–17 years.[88]

Most young people who self-harm do not seek help beforehand.[5] Concerns about confidentiality and stigma are reported by adolescents as barriers to seeking help for suicidal ideation. In a questionnaire study of a large sample of individuals aged 15–16 years, respondents suggested that peers might be afraid to ask for help because of worries that others might find out and rumours would start circulating around their school. This concern was more prominent in girls than in boys. Many adolescents reported concerns about the stigma of seeking help for self-harm and of being diagnosed with a mental illness. Some suggested that help-seeking should be made more normal and should be accompanied by a wider acceptance that everyone has problems.[89] Cultural context is important when considering help-seeking behaviour,[90] and will affect not only the recognition and management of suicidal behaviour, but also the development of culture-specific interventions.

Panel 3: Key challenges to prevention of self-harm and suicide in adolescents

Understanding
- Improving prediction of suicide risk in adolescents
- Developing a better understanding of the meaning (or meanings) of self-harm to the individual and how this relates to clinical management
- Further identification of subtypes of individuals who self-harm, tailoring treatments accordingly
- Better understanding of the factors associated with adolescents stopping self-harm
- Better understanding of suicide or self-harm clusters and social contagion
- Better understanding of the effect of new media on adolescent self-harm and suicide

Intervention
- Development and assessment of new psychosocial and pharmacological interventions that are acceptable to young people to reduce the risk of adolescent self-harm (its repetition), suicide, and other outcomes
- Development of innovative interventions and strategies that decrease stigma, promote adolescent help-seeking, and enhance meaningful engagement with health services
- Improvement of access to quality mental health care, especially in low-income and middle-income countries
- Better management of the care pathway (aftercare) of vulnerable young people as they move from child or adolescent to adult services

Prevention
- Protection against the effect of worldwide challenges (eg, economic recession) on adolescent mental health
- Tackling the stigma of mental illness and mental health problems
- Harnessing new media to promote positive mental health and protect young people from its harmful effects (eg, pro-suicide websites)
- Implementation of policies to promote the restriction of access to the means of suicide, especially firearms and safer storage of pesticides in rural areas of low-income countries
- Against the background of worldwide austerity, the promotion and integration of government policies on suicide and self-harm across other risk domains such as substance abuse and social care

Pharmacotherapy

Concerns about antidepressant use in children and adolescents were first raised in the UK in 2003 and the USA in 2004, and were followed by warnings released by regulatory agencies that there might be an increased risk of suicide with newer antidepressants. Much of the concern focused on prescription to younger age groups. However, the benefits of antidepressant-prescribing might outweigh the risk of emergent suicidal behaviour.[91] Although the risk has been judged to be highest in the early phases of treatment, risk of death in children as well as adults was shown not to be increased in the first month of treatment compared with subsequent months, and the risk of attempted suicide was highest in the month before starting antidepressant treatment.[92] The safety warnings had a pronounced effect on prescribing habits,[93] which was initially reported to be associated with an increase in suicide in children in the USA and Netherlands but this finding was not replicated over a longer study period in the UK.[94]

No pharmacotherapy trials have been done for adolescents who self-harm. Treatment trials for depression comparing antidepressant treatment with psychological treatment have, however, provided some information. In the Multicentre Treatment of Adolescent Depression Study, cognitive behaviour therapy, either alone or combined with fluoxetine, was associated with greater reduction in suicidal ideation or acts (combined) than fluoxetine alone.[95] In two other trials,[96,97] however, no difference was seen between cognitive behaviour therapy and SSRI antidepressant treatment on these outcomes.

Conclusions

Self-harm and suicide are major public health issues in young people worldwide and there are many challenges to their management and prevention (panel 3). Much is now known about their epidemiology and causes but research efforts should focus on the further identification of subtypes of those who self-harm or are at risk of suicide. Indeed, it would be helpful to have a better understanding of the factors associated with different levels of self-harm (eg, ideators *vs* high lethality attempts). In view of the diverse motives underpinning self-harm, a better understanding of the meaning of the act and how this relates to clinical management would be beneficial. It would be informative to know what factors are associated with adolescents stopping self-harm. The understanding of how and when exposure to self-harm and suicide increases risk of clustering and social contagion has important clinical implications. Only small advances have been made in prevention and there is a paucity of evidence for effective treatment interventions. The development and assessment of new psychosocial and pharmacological interventions to reduce self-harm and suicide should be a major priority, and should include internet-based interventions. The improvement of mental health care in adolescents in terms of both access to and quality of services is essential, especially in low-income and middle-income countries. Better management of the care pathway of vulnerable young people as they move from child and adolescent to adult services to ensure continuity of care should reduce the risk of suicide. Policies to promote the restriction of access to the means of suicide, including access to firearms and safer storage of pesticides, should be implemented. Development and assessment of new media and telephone support sources of help are essential as use of electronic media increases. The reduction of stigma associated with mental health problems and help-seeking is also a major challenge. The emphasis on prevention of self-harm and suicide in young people in national guidelines is a welcome step forward.

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