



Research paper

Impulsive suicide attempts among young people—A prospective multicentre cohort study in Sweden

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ABSTRACT

Background: We aimed to compare the prevalence of impulsive suicide attempts (ISA) among young adults and those over 25 who present at hospital in connection with attempted suicide. We also aimed to identify factors associated with ISA in young adults and to assess medical severity as well as the probability of repeated suicide attempts in this age group.

Method: A prospective multicentre cohort study included hospital known cases of suicide attempt ($N = 666$). The prevalence of ISA was compared between young adults (18–25) and adults aged > 26 . We used logistic regression models to identify factors associated with ISA, associations of ISA with high medical severity and prediction of new fatal or non-fatal suicide attempts within 6 months.

Results: 43.7% of the young patients had made an ISA, and 30.2% among those aged > 26 ($p = 0.001$). Among the young, substance use disorder was associated with ISA; crude odds ratio (OR) 2.0 (1.0–4.2), and adjusted OR 2.1 (0.99–4.4). Affective disorder and unemployment/ sickness absence implied lower odds of ISA. ISA resulted in injuries of high medical severity as often as more planned attempts and non-fatal or fatal repetition within 6 months was equally common (30%) in both groups.

Limitations: The study was set in psychiatric emergency services, which limits the generalizability.

Conclusions: Clinicians should acknowledge that suicide attempts among youth often occur without previous planning and may result in medically severe injuries. The probability of new fatal or non-fatal suicide attempts should be kept in mind also after an impulsive suicide attempt.

1. Introduction

Self-harm and suicidal behaviour are common in young people; hence, prevention of fatal and non-fatal suicidal events is a target for mental health improvement strategies. When performing risk assessments, clinicians often focus on the presence of suicidal planning where the suicidal act is considered to be the end of a pathway, through a continuum of suicidal feelings (Paykel et al., 1974; O'Connell et al., 2004). However, many suicidal acts have not been planned, and should be considered as impulsive acts (Rimkeviciene et al., 2015). There are indications that impulsive suicidal behaviour is more common among young people (Conner et al., 2005; Conwell et al., 1998; Hawton et al., 2005). These findings are, however, contradicted by other studies (Deisenhammer et al., 2009; Conner et al., 2007; Baca-Garcia et al.,

2001). Research on the prevalence of impulsive suicidal behaviour in young people can inform the development of targeted preventive strategies.

In clinical assessment, it would be useful to distinguish between those who are at risk of making impulsive suicide attempts (ISA) from those with a longer duration of ideation prior to the act, where there is likely to be a longer window of intervention possibilities. Impulsive attempts are associated with lower levels of depression in most studies (Simon et al., 2001; Brown et al., 1991; Baca-Garcia et al., 2005), but not other (Conner et al., 2005). Female gender (Conner et al., 2005) and experience of physical fights (Simon et al., 2001) have been associated with impulsive attempts, while the evidence is mixed regarding alcohol intake (Bagge et al., 2013; Baca-Garcia et al., 2001). Impulsivity is associated with self-harm in young people (Lockwood et al., 2016;

Abbreviations: ISA, impulsive suicide attempt; NSSI, non-suicidal self-injury; SIS, suicide intent scale; C-SSRS, Columbia suicide severity rating scale; KIVS, Karolinska interpersonal violence scale

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Stanford et al., 2017), but trait impulsivity is not always correlated with impulsivity of the attempt (Baca-Garcia et al., 2005; Gvion et al., 2014; Wyder & De Leo, 2007). Involvement in physical fights has been shown to be more prevalent among those who make impulsive suicide attempts and they may have an impaired ability to control aggressive impulses specifically, rather than a lack of impulse control in general (Simon et al., 2001). It is also possible that an exposure to violence might facilitate the capability of going through with suicide by way of “painful and provocative experiences” (Van Orden et al., 2010) and thereby increasing the propensity to act on impulsive suicidal thoughts. Certain means and methods of the attempt also seem to be associated with ISA; some studies suggest that less violent methods are used in low-planned suicides (Conner et al., 2005).

Impulsive suicide attempts are often assumed to be less medically severe in age-mixed populations (Baca-Garcia et al., 2005, 2001). This is debatable, as impulsive suicide attempts can be as medically serious as planned attempts (Simon et al., 2001; Gvion et al., 2014). The risk of new suicide attempts, fatal or non-fatal, after an impulsive suicide attempt is unknown. Most cross-sectional studies have shown that there is no difference in the prevalence of previous suicide attempts among those who make an impulsive attempt compared to those who make a planned attempt (Simon et al., 2001; Bagge et al., 2013; Spokas et al., 2012). However, there is a lack of prospective studies exploring the risk of suicide or repeated suicide attempts after an impulsive suicide attempt.

The overall aim of this study was to characterize ISA in young adults. We hypothesized that:

1. Suicide attempts are more likely to be impulsive among young individuals, aged 18–25, than among adults over 25.
2. In young persons, impulsive suicide attempts (ISA) are characterised by lower prevalence of depression, higher prevalence of alcohol intoxication at attempt and higher prevalence of mental disorders associated with impulsivity (ADHD, borderline personality disorder and substance use disorder) at the time of the attempt, than non-impulsive suicide attempts.
3. In young persons, impulsive suicide attempts are less likely to be carried out by violent means and less likely to be medically severe than non-impulsive suicide attempts.
4. In young persons, impulsive attempts are as likely to be followed by new fatal or non-fatal attempts than non-impulsive suicide attempts.

2. Method

2.1. The cohort and data collection

A multicenter study was conducted at three Swedish psychiatric university departments in Stockholm, Gothenburg and Umea between April 2012 and April 2016 ($n = 804$). Patients aged 18 and above presenting for psychiatric evaluation within 7 days after a self-harm event, with or without suicidal intent, were considered for participation. Most patients were admitted to psychiatric inpatient care at least over night at the time of inclusion. Participants were required to have the ability to participate in an interview, which excluded individuals with confusion, pronounced aggression or vivid psychotic symptoms and also those who did not speak Swedish. Since follow-up data were collected from electronic medical records, only those who were registered residents of the hospitals' catchment areas and had a Swedish personal identity number were eligible for recruitment. For the purpose of this study, only persons recruited after a suicide attempt were included, i.e. there must have been at least some (non-zero) intent to die (O'Carroll et al., 1996) ($n = 666$). The cohort was divided into young adults (18–25 years of age) and all others (26 and above).

Baseline data were collected from an interview that lasted around 1.5 h and from medical records. The interview included various assessment instruments, performed by specially trained mental health

staff (psychiatrists, psychologists and psychiatric nurses). For the present study, we used the Suicide Intent Scale (SIS) (Beck et al., 1974), the Columbia Suicide Severity Rating Scale (C-SSRS) (Posner et al., 2011) and the Karolinska Interpersonal Violence Scale (KIVS) (Jokinen et al., 2010), along with specific items on demographic data and past week symptoms of distress. Twenty interviews were conducted with two interviewers, performing separate assessments, to test the inter-rater reliability of the scales. Psychologists, psychiatrists, medical students and psychiatric nurses collected follow-up data on possible new events of self-harm from medical records six months after inclusion.

2.2. Measures

Impulsive suicide attempts (ISA) were operationalized by use of Beck's Suicidal Intent Scale (SIS), specifically items 6 and 15 which concern active preparation for the attempt and degree of premeditation. The scale consists of 15 items, each scored between 0–2. As in previous studies (Brown et al., 1991; Baca-Garcia et al., 2001; Suominen et al., 1997; Fazaal & Page, 2009; Groholt et al., 2000). SIS item 6 (Active preparation of the attempt) is scored as 0 = none, 1 = minimal to moderate, 2 = extensive and item 15 (Degree of premeditation) is rated 0 = none, 1 = suicide contemplated for 3 h or less, and 2 = suicide contemplated for more than 3 h. For the purpose of this paper, an ISA was operationalized as an attempt with no preparation (item 6 = 0) and no premeditation (item 15 = 0).

The rater/clinician-administered version of the Columbia Suicide Severity Rating Scale (C-SSRS) was used, assessing suicidality for lifetime and past month. Item 21a refers to the medical severity of the latest attempt scored from 0 (No physical damage or very minor physical damage) to 5 (death). For the purposes of the current study, *Low medical severity* was defined as a rating of 0 (none or very minor medical severity), *Medium medical severity* was defined as a rating of 1 or 2 (minor or moderate medical severity, medical attention needed) and *High medical severity* was defined as a rating of 3 or 4 on C-SSRS item 21a (requiring medical hospitalisation and possibly intensive care). The definition of *high medical severity* is similar to previous definitions of medically serious suicide attempts; as attempts that require inpatient care in specialised units/surgery/with extensive medical treatment (Beautrais et al., 1996; Horesh et al., 2012).

Experience of interpersonal violence was assessed with the Karolinska Interpersonal Violence Scale (KIVS), which captures the use of, and exposure to violence in childhood and in adulthood. We used a cut-off of 6 points for the variable Experience of Interpersonal violence (y/n) (Haglund et al., 2016; Jokinen et al., 2010).

Background characteristics regarding living conditions (*live alone*), occupation (presently *unemployed/sick-leave*), *suicides in primary group* (in any relative or friend), and self-reported *restlessness, significant anxiety* and *pronounced hopelessness* during past week were all operationalized as dichotomised variables (yes/no).

We retrieved baseline data of the clinical diagnosis of a mental disorder at index from medical records. Psychiatric diagnoses (in any position, first or secondary) were recorded at either the psychiatric evaluation after self-harm or upon discharge from the psychiatric department. The diagnoses were categorised into *Substance use disorder* (F10-19), *Affective disorder* (F30-39), *Personality disorder* (F60-69), *Anxiety disorder* (F40-48), *Disorder of psychological development* (F80-89) and *ADHD* (F90.0).

The composite outcome *Non-fatal and fatal suicide attempt within six months* was operationalized as a suicide attempt with at least some intent to die or a death by suicide as recorded in medical records.

Date of death was available in the electronic medical records via direct linkage to the Swedish population register.

2.3. Statistical analyses

Pearson's Chi² test was used to test for differences between

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