20-year outcomes in adolescents who self-harm: a population-based cohort study

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Summary

Background Little is known about the long-term psychosocial outcomes associated with self-harm during adolescence. We aimed to determine whether adolescents who self-harm are at increased risk of adverse psychosocial outcomes in the fourth decade of life, using data from the Victorian Adolescent Health Cohort Study.

Methods We recruited a stratified, random sample of 1943 adolescents from 44 schools across the state of Victoria, Australia. The study started on Aug 20, 1992, and finished on March 4, 2014. We obtained data relating to self-harm from questionnaires and telephone interviews at eight waves of follow-up, commencing at mean age 15·9 years (SD 0·5; waves 3–6 during adolescence, 6 months apart) and ending at mean age 35·1 years (SD 0·6; wave 10). The outcome measures at age 35 years were social disadvantage (divorced or separated, not in a relationship, not earning money, receipt of government welfare, and experiencing financial hardship), common mental disorders such as depression and anxiety, and substance use. We assessed the associations between self-harm during adolescence and the outcome measures at 35 years (wave 10) using logistic regression models, with progressive adjustment: (1) adjustment for sex and age; (2) further adjustment for background social factors; (3) additional adjustment for common mental disorder in adolescence; and (4) final additional adjustment for adolescent antisocial behaviour and substance use measures.

Findings From the total cohort of 1943 participants, 1802 participants were assessed for self-harm during adolescence (between waves 3 and 6). Of these, 1671 were included in the analysis sample. 135 (8%) reported having self-harmed at least once during adolescence. At 35 years (wave 10), mental health problems, daily tobacco smoking, illicit drug use, and dependence were all more common in participants who had reported self-harm during the adolescent phase of the study (n=135) than in those who had not (n=1536): for social disadvantage odds ratios [ORs] ranged from 1·34 (95% CI 1·25–1·43) for unemployment to 1·88 (1·78–1·98) for financial hardship; for mental health they ranged from 1·61 (1·51–1·72) for depression to 1·92 (1·79–2·04) for anxiety; for illicit drug use they ranged from 1·36 (1·25–1·49) for any amphetamine use to 3·39 (3·12–3·67) for weekly cannabis use; for dependence syndrome they were 1·72 (1·57–1·87) for nicotine dependence, 2·67 (2·38–2·99) for cannabis dependence, and 1·74 (1·62–1·86) for any dependence; and the OR for daily smoking was 2·00 (1·89–2·12). Adjustment for socio-demographic factors made little difference to these associations but a further adjustment for adolescent common mental disorders substantially attenuated most associations, with the exception of daily tobacco smoking (adjusted OR 1·74, 95% CI 1·08–2·81), any illicit drug use (1·72, 1·07–2·79) and weekly cannabis use (3·18, 1·58–6·42). Further adjustment for adolescent risky substance use and antisocial behaviour attenuated the remaining associations, with the exception of weekly cannabis use at age 35 years, which remained independently associated with self-harm during adolescence (2·27, 1·09–4·69).

Interpretation Adolescents who self-harm are more likely to experience a wide range of psychosocial problems later in life. With the notable exception of heavy cannabis use, these problems appear to be largely accounted for by concurrent adolescent mental health disorders and substance use. Complex interventions addressing the domains of mental state, behaviour, and substance use are likely to be most successful in helping this susceptible group adjust to adult life.

Funding National Health and Medical Research Council, the Royal Children's Hospital Foundation, and the Murdoch Childrens Research Institute.

Lancet Child Adolesc Health 2017

Published Online
July 7, 2017
http://dx.doi.org/10.1016/S2352-4642(17)30007-X

See Online/Comment
http://dx.doi.org/10.1016/S2352-4642(17)30022-6

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Introduction

Self-harm and suicide are major global health problems.[1] Self-harm is one of the strongest predictors of subsequent suicide[2] and, globally, self-inflicted injuries result in the deaths of more girls aged 15–19 years than any other cause.[3] Although the great majority of adolescents who self-harm cease doing so as they enter their adult years, we know little about how these individuals fare later in life.[4]

Recent evidence from longitudinal cohort studies of the general population shows that self-harming during adolescence is associated with mental and substance use disorders in early adulthood, independent of measured confounders.[5] However, the longer-term psychosocial outcomes associated with self-harm during adolescence have yet to be fully described. To date, most follow-up studies have been based on small, selected clinical samples;[6] however, given that only a minority of young people who self-harm require medical attention and present to clinical services,[7] such studies do not provide a clear picture of the long-term natural history of self-harm.

Research in context

Evidence before this study

We sought to identify relevant studies that have examined prospective associations between self-harm during adolescence and future mental health and social adjustment, in a non-treatment-seeking sample of adults. We searched MEDLINE and PsycINFO from inception and Embase for studies written in English published from database inception (1974) until April 3, 2017, using the following search terms: "self-harm", "self-injury", "longitudinal study", "cohort study", "community", and "mental health". The Avon Longitudinal Study of Parents and Children (ALSPAC) has reported a range of short-term, prospective, clinical, and social outcomes associated with self-harm at age 16 years in a community sample. The ALSPAC findings showed that any history of self-harm at age 16 years was associated with poorer outcomes in relation to mental and substance use disorders, education attainment, and employment. However, self-harm was measured on one occasion only and the outcomes were short-term in nature (ie, <5 years); as such, the longer-term outcomes remain unclear. To our knowledge, no published studies have reported on the long-term outcomes of self-harm during adolescence in a non-treatment-seeking sample with repeated measures of self-harm in the adolescent and young adult period.

Added value of this study

In this population-based, longitudinal study, we not only examined participants on six occasions during the adolescent years, but we also captured rich data relating to clinical and psychosocial outcomes up to 20 years later. Self-harm during adolescence was linked to increased prevalence of social disadvantage, anxiety, and licit and illicit substance use. Although adjusting for socio-demographic factors, adolescent substance use, and adolescent antisocial behaviour attenuated most of these associations, weekly cannabis use at age 35 years remained independently associated with self-harm during adolescence. Our findings suggest that self-harm during adolescence should be viewed as a conspicuous marker of emotional and behavioural problems that are predictive of poor life outcomes.

Implications of all the available evidence

Self-harm during adolescence is common in the general population and is associated with a distinct cross-sectional pattern of social and health-related disadvantage. Over time, individuals who have self-harmed have worse mental health and poorer psychosocial outcomes than those with no history of self-harm. Our findings suggest that interventions addressing multiple risk domains are likely to be more successful in helping this susceptible group adjust to adult life.

Using data from the Victorian Adolescent Health Cohort Study (VAHCS),[8] we sought to examine the health and social outcomes in adulthood of a sample of community-dwelling participants with a history of self-harm during adolescence. We had two main aims: first, to document the prevalence of social difficulties or mental and substance use disorders at the age of 35 years in participants who had reported having self-harmed during adolescence compared with those who had not; and second, to examine the extent to which poor outcomes at 35 years might be explained by other health risks known to be associated with self-harm during adolescence.

Methods

Study design and participants

The Victorian Adolescent Health Cohort Study (VAHCS) is a 10-wave longitudinal cohort study of the health across the second to the fourth decade of life in the state of Victoria, Australia, conducted between Aug 20, 1992, and March 4, 2014. At baseline, a representative sample of mid-secondary school adolescents was selected with a two-stage cluster sampling procedure. At stage one, 45 schools were chosen at random from a stratified frame of government, Catholic, and independent schools, with a probability proportional to the number of Year 9 (aged 14–15 years) students in the schools in each stratum. At stage two, a single intact class was selected at random from each participating school. One class entered the study in the latter part of the ninth school year (wave 1) and the second class 6 months later (wave 2). School retention rates to Year 9 in the year of sampling were 98%. One school did not continue beyond wave 1, with a loss of 13 participants, leaving 44 schools. Participants were subsequently reviewed at four 6-month intervals between the ages of 15–18 years (waves 3–6) with four follow-up waves in adulthood, ages 20–21 years (wave 7), 24–25 years (wave 8), 28–29 years (wave 9), and 34–35 years (wave 10). In this Article, we present data collected in waves 3–6 and wave 10.

Data collection protocols were approved by the Ethics in Human Research Committee of the Royal Children's Hospital, Melbourne. Informed parental consent was obtained before inclusion in the study. In the adult phase, all participants were informed of the study in writing and gave verbal consent before being interviewed.

Procedures

The background factors measured were sex, age, participant and parental completion of secondary education, and parental divorce or separation up to and including wave 6.

The following measures were summarised across adolescence by identifying any occurrence in waves 3–6 (with the response assumed to be negative or "no occurrence" when missing).

We assessed self-harm at each wave from waves 3–6, using the following question: "In the last [reference