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Research report

Depressed adolescents as young adults – Predictors of suicide attempt and non-suicidal self-injury during an 8-year follow-up

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ABSTRACT

Background: Clinically derived follow-up studies examining the predictors of suicide attempts (SA) and non-suicidal self-injury (NSSI) among adolescents are scarce. The aims were to study SA and NSSI as predictors of future NSSI and SA, and to study the role of other risk and protective factors, especially alcohol use, and perceived social support from family and peers during a 1-year follow-up and between the 1-year and 8-year follow-ups among consecutively referred depressed adolescent outpatients.
Methods: The Adolescent Depression Study (ADS) is a longitudinal study of depressed adolescent outpatients (mean age at baseline 16.5 years, 81.8% females). The subjects of the present study ($n=139$, 63.8% of the original study population) were assessed at baseline, at 1-year and 8-year follow-ups using semi-structured diagnostic interviews (K-SADS-PL) for DSM-IV diagnoses, and structured self-report scales for clinical risk factors.
Results: In multivariate comparisons, SAs were predicted both in the 1-year follow-up and in the period between the 1- and 8-year follow-ups by alcohol use and low perceived peer support. NSSI in the 1-year of follow-up was predicted by baseline NSSI, younger age and alcohol use, whereas the only significant predictor for NSSI between the 1- and 8-year follow-ups was NSSI.
Limitations: A large majority of the sample were females, limiting the possibility to analyze gender differences.
Conclusions: Among depressed outpatients NSSI is a strong predictor of suicidal behavior, and other factors beyond depression, such as alcohol use and availability of social support, must also be addressed to prevent the recurrence of suicidal behavior.

1. Introduction

Suicide attempts (SA) and non-suicidal self-injury (NSSI) are major public health concerns among adolescents. NSSI, defined as direct and deliberate destruction of body tissue in the absence of any observable intent to die (e.g. cutting and burning), is more common among adolescents than SA (Nock, 2010; Ougrin et al., 2012). In clinically referred populations NSSI is more frequent and severe than in community samples, also being associated with more severe psychopathology (Nock, 2010). However, NSSI is studied much less than suicide and SA (Pelkonen et al., 2011; Wilkinson et al., 2011). In addition, much of the research on NSSI does not include separate categories for NSSI and SA, thus failing to distinguish SA with clear intent to die from NSSI without suicidal intent.

NSSI appears to be cross-sectionally associated with SA and to predict future SA and suicides in adults (Brunner et al., 2007; Nock et al., 2006). Among adolescents, prospective studies show a substantial risk of suicide after self-harm that results in hospital presentation (Hawton et al., 2012). In retrospective life-course studies early self-harm is not uncommon in those who die by suicide in late adolescence or early adulthood (Hawton et al., 2012). In the Treatment of SSRI-resistant Depression in Adolescents study (TORDIA), NSSI predicted both incident SA and NSSI, whereas baseline SA was not a significant predictor of SA during the 24-week follow-up (Asarnow et al., 2011). Further, in the Adolescent Depression, Antidepressants and Psychotherapy Trial study (ADAPT), NSSI predicted both NSSI and SA in the 28-week follow-up (Wilkinson et al., 2011). Whether NSSI predicts future suicide/SA and NSSI when adolescents mature to young adulthood warrants further longitudinal research.

Despite the observed similarities between NSSI and SA the risk factors are not necessarily identical (Cox et al., 2012). Previous research indicates that a history of NSSI or SA in adolescents was related to a wide range of risk factors, such as depressive and anxiety symptoms, substance use, poor family support, problems in friendship, and histories of abuse (Brunner et al., 2007; Cox et al., 2012; Fergusson et al., 2003; Muehlenkamp and Gutierrez, 2007; Wilkinson et al., 2011). However, adolescents with NSSI

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have been younger than adolescents with SA (Cox et al., 2012) suggesting that NSSI has an earlier onset than SA. Adolescents with SA have had higher levels of disadvantageous familial characteristics, impaired family function, and family history of suicide (Cox et al., 2012; Fergusson et al., 2003; Wilkinson et al., 2011) than those with NSSI. The significance of mood disorders in adolescent suicidal behavior is well-known, while substance use has received somewhat less attention. Reportedly, one third of adolescent psychiatric inpatients, with a history of NSSI had a diagnosis of alcohol abuse or alcohol dependence (Nock et al., 2006), while alcohol use is prospectively associated with SA and NSSI in adolescents (Cooper et al., 2005; Skarbo et al., 2006).

The vulnerability factors can be further moderated by the presence of resilience or protective factors such as social support (Nock et al., 2006). Although the significance of family as a source of support decreases during adolescent development, social support from parents seems to have the most efficient effect in buffering adolescents against depression (Lewinsohn et al., 2001). In addition, in depressed adolescent samples, low support from family continues to predict suicidality in adulthood (Lewinsohn et al., 2001). The influence of friendships increases dramatically during adolescence (Winterrowd et al., 2011), however, peer relationships and poor perceived social support from friends has been identified longitudinally in only a few studies (Fergusson et al., 2003; Prinstein et al., 2001; Wilkinson et al., 2011). Some studies using clinical and general population samples have found that having unsupportive friends may be worse for adolescent wellbeing than having no friends at all (Prinstein et al., 2001, 2000).

Clinically derived follow-up studies examining the continuity and predictors of NSSI and SA among adolescents are still scarce (Asarnow et al., 2011; Fliege et al., 2009). Using a naturalistic clinical sample, this study adds to these existing data by reporting the prevalence of NSSI and SA and their predictors longitudinally among depressed adolescents as they reach adulthood. The Adolescent Depression Study (ADS) is a prospective naturalistic clinical research and development project investigating adolescent depressive mood disorders during 8 years of follow-up. We have previously reported how alcohol use and mood disorder with Axis I comorbidity at baseline predicted suicidal ideation, SA and NSSI among depressed adolescents during the 1-year follow-up (Tuisku et al., 2012). We now extend these results and concentrate on the progression and clinical predictors of NSSI and SA in the short term at the 1-year follow-up and in the longer term in the period between the 1- and 8-year follow-ups among depressed adolescents. The specific aims of this study are as follows: (1) to study NSSI and SA as predictors of future NSSI and SA and (2) to study the role of other risk and protective factors, especially alcohol use, and perceived social support from family and peers.

Based on prior research we expected that prior NSSI would predict both future NSSI and SA. We also expected that alcohol problems and low perceived social support from family and friends would predict NSSI and SA.

2. Method

The present study is part of the Adolescent Depression Study (ADS), a naturalistic clinical research and development project investigating adolescent's depressive mood disorders. More detailed descriptions of the participants, assessments and outcomes are available elsewhere (Karlsson et al., 2008, 2006).

2.1. Participants

Participants were recruited from the adolescent outpatient clinics in the Peijas Medical Health Care District (PMCD) in southern Finland between February 1st 1998 and December 31st 2001. Consecutively referred adolescent (aged 13–19 years) outpatients were screened for depressive disorders using the Beck Depression Inventory (BDI) (Beck et al., 1961) and the General Health Questionnaire-36 (GHQ) (Goldberg, 1972). The screen positives (BDI $\geq$ 10 and GHQ $\geq$ 5) willing to participate in the study were interviewed using the Schedule for Affective Disorders and Schizophrenia for School-Aged Children – Present and Life-time (K-SADS-PL) (Kaufman et al., 1997), a semi-structured interview with high reliability and validity to assess DSM-IV Axis I disorders. The diagnostic interviews were conducted by trained researchers who were also experienced clinicians. The 218 adolescents diagnosed as having a current depressive mood disorder formed the original adolescent outpatient study population. Written informed consent was obtained from the participants and also from their legal guardians where participants were aged less than 18. The study protocol was accepted by the Ethics Committees of Helsinki University Central Hospital and the Department of Adolescent Psychiatry of the PMCD.

After the baseline evaluation the adolescent outpatients were re-evaluated approximately 1 year ($n=189$) and 8 years later ($n=148$) with structured diagnostic interviews (K-SADS-PL at the 1-year follow-up, SCID-I (First et al., 1996) at the 8 year follow-up) and self-report scales. The median time interval between baseline and the follow-up evaluation was 12.5 months (interquartile range 0.9) and 97.4 months (interquartile range 18.3) for the 1-year and 8-year follow-ups, respectively. Those subjects who participated in both the 1-year and 8-year follow-ups ($n=137$) were included in the present study. There were two completed suicides (a female participant who completed suicide before and a male participant who completed suicide after the 1-year follow-up) during the 8-year study period and data on these adolescents were included in the analyses when possible, so the total n for study was 139. Those lost to attritions ($n=79$, 36%) did not differ from the study participants ($n=139$) in terms of sociodemographic factors (sex $\chi^2=0.033$, df=1, $p=0.857$; age $t=-1.188$, df=216, $p=0.236$; parental SES $\chi^2=2.78$, df=3, $p=0.426$), depressive symptoms (BDI-sumscore $t=-1.469$, df=216, and $p=0.143$), or prevalences of SA ($\chi^2=1.089$, df=1, and $p=0.297$) or NSSI ($\chi^2=0.213$, df=1, and $p=0.644$) at baseline (for definitions of SA and NSSI, see "Measures" below).

As the study was naturalistic, the outpatients received "treatment as usual" of a clinically defined duration in a general adolescent psychiatric setting within Finnish secondary health care (Karlsson et al., 2008). When they were 19 years old, they were able to contact adult psychiatric services, if they needed psychiatric treatment. Up to the 1-year follow-up, 60% of the 139 adolescents received psychiatric medication, all received individual appointments and 49% received at least one family counseling appointment. Up to the 1-year follow-up, 46% of the outpatients had continued the treatment. Between the 1-year and 8-year follow-ups, 62% had received psychiatric medication and 80% individual appointments. Twenty five (19%) of the 139 adolescents had received psychiatric inpatient treatment between the 1-year and 8-year follow-ups.

2.2. Measures

Suicide attempts (SA) were defined as an intentional action to end life (Nock et al., 2006) and were measured with two questions from the screening section of the K-SADS-PL diagnostic interview relating to their seriousness (1=none, 2=ambivalent, and 3=serious), and lethality (1=none, 2=not life threatening, and 3=life-threatening). Those attempts with a seriousness of "3" and/or a lethality rating of "2" or "3" were considered as SAs in this study. NSSI was defined as direct and deliberate destruction of body tissue in the absence of any observable intent to die (Nock,