

Self-injury and suicide behavior among young people with perceived parental alcohol problems in Denmark: a school-based survey.

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Abstract

The aim of this study was to test the hypothesis that young people who perceive their parents to have alcohol problems are more likely to self-injure, have suicide ideation, and to attempt suicide than young people without parental alcohol problems. We also tested whether the association between parental alcohol problems and self-injury, suicide ideation, and suicide attempt among young people differed depending on the gender of the child and the parent.

Data came from the Danish National Youth Study 2014, a web-based national survey. A total of 75,853 high school and vocational school students participated. Self-injury, suicidal ideation and suicide attempts were outcomes and the main exposure variables were perceived parental alcohol problems, gender of the parent with alcohol problems, cohabitation with a parent with alcohol problems and severity of the parents' alcohol problems.

Young people with parental alcohol problems had higher odds of self-injury (boys: OR=1.59 [95%CI 1.40-1.82]; girls: OR=1.84 [95%CI 1.69-1.99]), suicidal ideation (boys: OR= 1.81 [95%CI 1.59-2.06]; girls: OR 1.74 [95%CI 1.59-1.89]), and suicide attempt (boys: OR=2.10 [95%CI 1.63-2.71]; girls: OR=2.09 [95%CI 1.80-2.42]) compared to young people without parental alcohol problems. Girls with parental alcohol problems had higher odds of self-injury than boys with parental alcohol problems, whereas no gender differences were found for suicidal ideation and suicide attempts. Also no differences were found depending on the gender of the parent with alcohol problems.

This study shows that young people with parental alcohol problems have higher odds of self-injury, suicide ideation and suicide attempts.

Introduction

Self-harm and suicide are major public health problems in adolescence and young adulthood, with high rates of self-harm and also suicide being the second most common cause of death in young people worldwide [1, 2]. International community-based studies show that around 5-20% of adolescents, with considerable more girls than boys, report having self-harmed [3-8], and according to hospital records the prevalence seems to be rising [9]. Young people who self-harm, independent of suicidal intent, have been found to also have higher rates of suicide attempts and are more likely to die from suicide [8, 10-12].

There is clear evidence that family adversities, such as parental mental illness, parental divorce, and parental death (especially by suicide) are important risk factors for both self-harm and suicide attempts in adolescence [1, 13, 14]. Parental alcohol problems have been associated with poor parent-child communication [15, 16], reversed responsibility roles and disrupted routines [17, 18], high level of family conflicts [18], parental divorce [19], child neglect [18], and higher risk of verbal, physical, and sexual abuse [18, 20], all of which are family adversities which are also associated with elevated risk for self-harm and suicide behavior. However, despite the associations with self-harm and suicidal behavior, research into the relationship between parental alcohol problems and self-harm and suicide behavior among young people is very limited. To our knowledge no studies have investigated the association between parental alcohol problems and intentional self-injury in youth, whereas studies have shown that suicidal ideation and suicide attempt in adolescence are related to parental alcohol problems [19, 21-27]. These studies have mostly been based on clinical cases identified in emergency units, hospital records, or through alcohol treatment units. However, only a small proportion of young people who self-harm, consider suicide, or attempt suicide present to hospitals, meaning that this behavior is largely hidden from clinical services [1]. More studies based on the general population are needed in order to generalize clinical results and expand the existing knowledge of the consequences of parental alcohol problems on the risk of self-injury, suicidal ideation and suicide attempts among young people.

The gender of the alcohol abusing parent and the gender of the young person might be important for the association between growing up with parents with alcohol problems and self-harm and suicide behavior. Gender differences in the prevalence of self-harm and suicide attempts and parental alcohol problems have been found with considerably more girls than boys self-harming and attempting suicide in adolescence [1, 28] and alcohol problems being more common among men

than women [29]. Park et al. 2006 found in their study of 1312 students, that males with parental alcohol problems had an OR of 3.69 [CI 95% 2.03-6.70] for serious suicidal ideation within the past two weeks compared to males without parental alcohol problems, whereas the association between parental alcohol problems and suicidal ideation were statistically insignificant for females [30]. Thompson et al. 2016 found that paternal and maternal alcohol problems predicted equal levels of risk for suicide attempts among the children, whereas both parents' alcohol problems substantially increased the level of risk for suicide attempt [19].

The aim of this study was to test the hypothesis that young people with perceived parental alcohol problems are more likely to self-injure, have suicidal ideation, and to attempt suicide than young people without perceived parental alcohol problems. We tested whether the association between parental alcohol problems and self-injury, suicidal ideation and suicide attempt among young people differed depending on the gender of the child and the parent.

Method

The Danish National Youth Study 2014

The data came from the Danish National Youth Study 2014, a national survey of 75,853 high school and vocational school students. The Danish National Youth Study was conducted with the aim of investigating health, health behavior and mental health among young people in secondary education in Denmark. In spring 2014 all of Denmark's 137 general high schools and the 12 largest vocational schools were invited to participate. School participant proportion was 85% among high schools and 83% among vocational schools. In high schools, students, aged 15-25, in all grades and classes were invited to participate (N=83,288), while only students, aged 15-25, in basic courses at vocational schools were invited (N=6,279). Individual participant proportions were 85% for students in high schools and 72% for vocational school students. Data was collected from January to November 2014. Teachers gave students a code for accessing the electronic survey. Students answered the electronic questionnaire, which consisted of a total of 380 questions, in class during one to two lessons lasting 45 minutes each. Complete subject analyses were performed and participants with missing data on perceived parental alcohol problems (N=3,082), perceived ethnicity (N=1,031), parental separation within the last year (N=1,104), financial strains in the family within the last year (N=51), family fragmentation (N=679), were excluded from all analysis. After excluding those with missing data on the outcomes (self-injury (N=1,850), suicidal ideation (N=1,881) and suicide

attempt (N=3,250)), the study population was respectively 67,228, 67,197, and 65,828, in analysis of self-injury, suicidal ideation and suicide attempt as the outcome.

Measures

Perceived parental alcohol problems

Parental alcohol problems were self-reported by young people and indicated through the question “Does anyone in your immediate family have alcohol problems?” The possible responses were “no, no one,” “mother,” “father,” “step-parent,” “siblings,” or “other adults.”

Parental alcohol problems

An overall variable indicating if participants perceived any parent (mother/father/step-parent) to have alcohol problems (yes/no) was constructed.

Parent with alcohol problems

Based on the same question, a variable was also coded to distinguish between the alcohol problems of mothers, fathers, step-parents or both parents.

Cohabitation with parent with alcohol problems

To examine the effect of cohabitation with parents with parental alcohol problems, a variable was coded to differentiate between those living with and without the parent with perceived alcohol problems.

Insecure due to parents’ drinking

To study the severity of parental alcohol problems, participants who had previously answered that they had a parent with alcohol problems were asked whether they “had ever felt insecure because their mother, father, or step-parent was affected by alcohol?” The possible answers were: “no, never,” “yes, sometimes,” and “yes, often.”

Yelling or scolding due to parents’ drinking

Participants were also asked if they “had ever been yelled at or scolded because their mother, father, or step-parent was affected by alcohol?” The possible answers were: “no, never,” “yes, sometimes,” and “yes, often.”

Self-harm and suicide behaviors

Self-injury

Participants were asked if they “ever have deliberately hurt themselves e.g. cutting, scratching, burning, or hitting?”. Possible answers were “Yes” and “No”.

Suicidal ideation

Participants were asked if they “ever have considered suicide”. Possible answers were “Yes”, “No”, and “Do not want to answer”. Those who answered they did not want to answer (N= 4,564) were coded conservatively and were added to those answering “No” to the question.

Suicide attempts

Participants, who had considered suicide, were also asked if they “have ever attempted suicide”. The possible answers were “Yes”, “No”, and “Do not want to answer”. Those who had previously answered they had not considered suicide were added to those answering “No” to the question and those who answered they did not want to answer (N=1,393) were coded as missing.

Statistical analysis

Statistical analyses tested whether perceived parental alcohol problems were associated with self-injury, suicidal ideation and suicide attempts. Multi-level logistic regression, nesting participants within school classes (n=3,285) within schools (n=131) were applied to account for dependency among participants within the same class and within the same school, as it has been suggested that self-injury, suicidal ideation and suicide attempts tend to cluster [1, 7, 31, 32]. For each of the three outcomes, separate regression models were performed with the following exposure variables: parental alcohol problems, parent with alcohol problems, cohabitation with parent with alcohol problems, insecurity due to parents’ drinking, or yelling or scolding due to parents’ drinking.

Gender differences in the association between parental alcohol problems and self-injury, suicide ideation and suicide attempts were hypothesized. Accordingly all models were stratified by sex and the likelihood ratio test was used to test a model including interaction between parental alcohol problems and child’s gender against a model without interaction, as well as a model including interaction between child’s gender and which parent who had the alcohol problem against a model without interaction. All analysis were adjusted for covariates hypothesized to be potential confounders: age (categorical ≤ 16 , 17, 18, 19, ≥ 20 years of age), perceived ethnicity

(Danish/ Danish and other/ other ethnicity than Danish), family fragmentation (living alone/living with both parents/living with one parent: mother or father), parental separation within the last year (parents moved apart: yes/no) and financial strains in the family within the last year (parents had difficulties paying the bills: yes/no). Socioeconomic position was also hypothesized to be a potential confounder; however no information on socioeconomic position was available in the survey. A sensitivity analysis on restricted register-linked data (N=63,510; 63,478; 62,212) was performed adjusting for parents' highest achieved educational level (basic schooling/ high school or vocational school/ higher education).

The chi-squared test was used to test differences with regard to which parent was perceived as having alcohol problems, and also with regard to living status. Trends in the associations depending on the severity of parents' alcohol problems were tested by including the severity variables continuously. Statistical analyses and data processing were performed using STATA 14.

Results

Study population characteristics

Table 1 shows study population characteristics. The study population included 67,228 young people in high schools and vocational schools (Table 1). More girls (7.9%) than boys (5.7%) reported parental alcohol problems (χ^2 test, $p < 0.000$). Young people with parental alcohol problems were more likely to be older, attend vocational schools, live with only one parent or alone, have experienced parental separation within the last year, and have financial strains in the family within the last year.

Self-injury

Among boys with parental alcohol problems 23% reported ever having self-injured compared with 12% among boys without parental alcohol problems. Among girls 42% with parental alcohol problems and 23% without parental alcohol problems had ever self-injured. Both boys (OR= 1.59 [95%CI: 1.40-1.82]) and girls (OR= 1.84 [95%CI: 1.69-1.99]) with parental alcohol problems had higher odds of self-injury, compared to boys and girls without parental alcohol problems (Table 2). The likelihood ratio test showed a significant interaction between gender and parental alcohol problems in the association with self-injury ($p = 0.019$). There was no difference in the strength of the association of self-injury with mothers having an alcohol problem compared with fathers in

either boys ($p=0.867$) or girls ($p=0.731$). Having both parents with alcohol problems was associated with higher odds of self-injury in both boys (OR=2.51 [95%CI: 1.70-3.69]) and girls (OR=2.69 [95%CI: 2.09-3.48]). Girls who lived with the parent with alcohol problems had higher odds of self-injury compared to girls who lived away from the parent with alcohol problems ($p=0.002$); this was not found for boys. Boys and girls who, because of parental alcohol problem, sometimes or often felt insecure, or had been yelled at or scolded, had higher odds of self-injury, compared to those who never had these experiences. The tests for trend were highly significant ($p<0.001$) for both variables.

Suicidal ideation

Young people with parental alcohol problems had higher odds of suicidal ideation than those without parental alcohol problems (boys, OR=1.81 [95%CI 1.59-2.06]; girls, OR=1.74 [95%CI 1.59-1.89]) (Table 3). No significant interaction was found for suicidal ideation between gender and parental alcohol problems ($p=0.793$). Girls who lived with the parent with alcohol problems had higher odds of suicidal ideation compared to girls who lived without the parent with alcohol problems ($p=0.003$). Among boys the difference in cohabitation status was not statistically significant. The more often both boys and girls reported having felt insecure, or been yelled at or scolded because their parents were affected by alcohol, the higher the odds of suicidal ideation.

Suicide attempts

Young people with parental alcohol problems had higher odds of suicide attempts than those without parental alcohol problems (boys, OR=2.10 [95%CI 1.63-2.71]; girls, OR=2.09 [95%CI 1.80-2.42]) (Table 4). There was no significant interaction for gender and parental alcohol problems (log-likelihood ratio test, $p=0.649$). Living with the parent with alcohol problems was strongly associated with suicide attempt among both boys ($p=0.016$) and girls ($p=0.019$). Test for trend ($p<0.001$) showed that the more often boys and girls with parental alcohol problems felt insecure or were yelled at or scolded because their parents were affected by alcohol, the higher the odds of a suicide attempt. For example, boys who often had been yelled at or scolded because of parents drinking had 4.53 [95%CI 2.90-7.08] times higher odds of ever having attempted suicide than boys without parental alcohol problems.

Sensitivity analysis

Including parental educational status in the models did not change the estimates considerably (Supplementary material).

Discussion

This study has shown that young people with parental alcohol problems have higher odds of self-injury, suicidal ideation and suicide attempts than young people without parental alcohol problems. Also, girls with parental alcohol problems may have higher odds of self-injury than boys with parental alcohol problems, whereas no gender differences were found for suicidal ideation and suicide attempts. Further, we found no difference in odds of self-injury, suicidal ideation and suicide attempts in either boys or girls dependent on which parent had alcohol problems. Girls who lived with the parent with alcohol problems were more likely to self-injury, have suicidal ideation and make suicide attempts than girls who were not living with the parent with alcohol problems, whereas boys who were living with the parent with alcohol problems were only more likely to attempt suicide.

To our knowledge no previous studies have investigated the association between parental alcohol problems and intentional self-injury in young people. Our results confirm the hypothesis that parental alcohol problems are associated with higher odds of self-injury in young people, in our study statistically significantly stronger for girls than boys. However, the association between parental alcohol problems and self-injury for boys (OR= 1.59 [95%CI: 1.40-1.82]) and girls (OR= 1.84 [95%CI: 1.69-1.99]) were fairly similar, indicating that gender differences in the association between parental alcohol problems and self-injury might not be of clinical relevance.

Previous studies have found boys with parental alcohol problems to be more susceptible to suicidal ideation than girls with parental alcohol problems. For example, results from a US adult population survey showed that having a family history of alcoholism increased the risk of suicidal ideation among men, but not women [33] and Park et al. also found parental alcohol problems to be associated with serious suicidal ideation in males but not in females [30]. In contrast, our results showed no gender differences for suicidal ideation or suicide attempts.

Our results on suicide attempt are in line with previous studies with various study designs. For example a register based study of 84,765 children born in 1966 in Denmark, followed from age 13 to 27 years, showed that children with parents hospitalized with an alcohol related diagnosis had 1.8 (95% CI: 1.4-2.4) times higher odds of attempting suicide [23]. Also, Tishler and McKenry found that both fathers and mothers of young suicide attempters in emergency units consumed significantly more alcohol than parents of controls [22]. The association between parental alcohol problems and suicide attempts could partly be explained by a mediating effect of parental suicide/suicide attempts. Suicide often aggregates in families [13]. There is clear evidence

of a higher risk of suicide behavior among people with alcohol abuse disorder [21, 25]. For example, among adult children of parents with alcohol problems in therapy, Mackrill & Hesse found a significant association between attempted suicide in childhood and death by suicide in parents with alcohol problems, [21]. Our results also support previous findings of mothers' and fathers' alcohol problems being associated with equal levels of risk for suicide attempts among offspring, whereas where both parents had alcohol problems this substantially increased the level of risk for suicide attempts [19]. Additionally, we found that this was also the case for self-injury and suicidal ideation.

The nature of our study prevents us from being able to explain mechanisms leading to increased odds of self-injury, suicidal ideation and suicide attempts in young people with parents with parental alcohol problems. However, research suggests that parental alcohol problems can damage attachment, family dynamics, relationships and functioning, and increase the risk of violence and abuse [17, 18, 34], which potentially could explain the higher odds of self-injury, suicidal ideation and suicide attempts.

The large survey sample is one of the main strengths of our study. It enabled separate examination of associations with the alcohol problem of mothers, fathers, step-parents, and both parents and the drinking pattern of young people.

Most studies on parental alcohol problems and the association with offspring suicidal behavior have been based predominantly on more severe (and often clinical) cases of parental alcohol problems. Whereas in this study we investigated the impact of perceived parental alcohol problems on self-reported self-injury, suicidal ideation and suicide attempt in a large general population sample of young people. Parental alcohol problems were self-reported by the young people and therefore were expressions of their perception of whether their parents' alcohol use could be characterized as problematic. Also the outcomes: self-injury, suicidal ideation and suicide attempt, were self-reported. The approach gives unique insight into the prevalence of perceived parental alcohol problems and the association with self-injury, suicidal ideation, and suicide attempt in youth that could not have been obtained via registers or in clinical studies.

Selection bias due to non-participation is assumed to be limited because of the high rate of participation (85%). By inviting all students in a class to participate, all students present that day completed the survey, unless they declined. Despite the fact that our study sample is not representative of all young people in Denmark, it does represent a very large proportion of Danish adolescents (66% of all high school students and 11% of vocational students in basic courses in

Denmark) and can therefore be considered representative of secondary education students in Denmark [35].

There are, however, several limitations of the study design. Parental alcohol problems were measured by a single question and no information on duration and severity of parents' current alcohol problems was collected. We did not include any information from the parents regarding their alcohol consumption or their own perception of whether they themselves had alcohol problems. Neither was any kind of objective classification used to assess whether the parents were alcohol dependent or heavy drinkers. Children of parents with alcohol problems have been found to be loyal to their parents and since alcohol problems are generally a subject of taboo [21] accordingly, under-reporting of parental alcohol problems is likely to have occurred. Also the outcomes self-injury, suicidal ideation and suicide attempts were self-reported in single items and since these are also relatively taboo topics this could have led to underreporting. Participants who answered they did not want to answer whether they had ever considered suicide was coded conservatively into "No". This could have led to an underestimation of the associations.

Furthermore, there could be problems with the temporality of the exposure and outcome measures. Participants were asked if they had ever self-injured, ever considered taking their life, and ever attempted suicide. The outcomes could therefore have occurred before the parent's alcohol use became problematic. This potential problem with temporality prevents us from drawing casual inference from our results.

The nature and extent of the data made it possible to include a wide range of confounders. However, adjusting for too few confounders could have caused residual confounding. Mental illness and alcohol problems are strongly associated and mental illness is a strong risk factor for self-injury, suicidal ideation and suicide attempts [2]. The heritability of mental illness therefore makes parental mental illness and parental suicide/ suicide attempts potential confounders for the association between parental alcohol problems and self-injury, suicidal ideation and suicide attempts among young people. Unfortunately, measures of parental mental illness and parental suicide/suicide attempts were not available in the Danish National Youth Study 2014 and neither was linkage to relevant psychiatric registers.

Conclusion

The results of this study show that young people with perceived parental alcohol problems have higher odds of self-injury, suicidal ideation and suicide attempts than young people without

perceived parental alcohol problems. This should be born in mind when designing prevention programs and when assessing young people who may be at risk or have already self-injured.

Conflict of interest

Nothing to declare

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