Is high-risk use of intoxicants more common among adolescents who have seen their parents intoxicated?

Summary

Background. Adolescents' alcohol consumption is related to their parents' alcohol consumption, but little focus has been placed on whether there is a connection with parental intoxication. The purpose of the study was to investigate whether the experience of seeing their parents intoxicated is associated with adolescents alcohol consumption and experimenting with drugs in their teens.

Material and method. The study is prospective and based on data from 2 399 teenagers who took part in the Ung-HUNT 1 study in 1995–1997 and the Ung-HUNT 2 study in 2000–2001. Self-reported questionnaire data and analysis by means of logistic regression, stratified by gender, were used.

Results. Having been drunk > 10 times was associated with having seen their parents intoxicated among both boys (OR 3.7; 95% CI 2.7–5.1 and girls (OR 2.0; 1.5–2.6). Drinking alcohol weekly or more frequently was associated with parental intoxication among boys (OR 2.2; 1.6–3.0), but not girls unless they had seen their parents drunk many times (OR 2.4; 1.1–5.2). Experimenting with drugs was associated with parental intoxication among both boys (OR 2.6; 1.7–3.9) and girls (OR 1.6; 1.1–2.2).

Interpretation. Repeated intoxication, frequent alcohol use and experimenting with drugs by teenagers were associated with seeing their parents intoxicated. There are other explanatory factors that this study was unable to control for, and any interpretation of results should take this into account.

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According to the World Health Organization (WHO), alcohol consumption is the third most important cause of illness and early death. In 2004 as many as 320 000 adolescents in the age group 15–29 died of alcohol-related causes worldwide (1). A SIRUS report on the development of the Norwegian drinking pattern in the period 1973–2004 showed that a steadily increasing number of Norwegians drink alcohol, and that more alcohol is consumed per drinking occasion (2). Even though Norwegians have a lower overall consumption of alcohol than people in many other European countries (3), adult Norwegians are intoxicated more frequently than people in countries in southern Europe (4). A European study from 2007 showed that the volume of alcohol consumed by young Norwegians on the last occasion they drank was considerably above the average (5). The risk of harm to health is not only related to how much alcohol is consumed over time, but also to how much is drunk on each drinking occasion (6). Knowledge of what influences adolescents' use of intoxicants is therefore important in a public health perspective.

Several studies have shown that there is an association between parental consumption of alcohol and adolescents' substance use (7–11). A systematic review article from 2010 examined longitudinal studies of parenting factors associated with alcohol consumption in adolescents (12). One of the conclusions was that children who observed their parents drinking alcohol drank more as adolescents than those who had not had this experience. However, the association varied somewhat depending on the children's gender and age.

Are children harmed by seeing their parents drinking alcohol? This question has been much debated (13, 14). A great deal of the research on adults' alcohol consumption has been based on clinical samples of parents with an alcohol addiction (15), which makes it difficult to transfer the findings to the general public. Epidemiological alcohol research has traditionally emphasised the volume that is consumed rather than different ways of drinking (16). There is thus little knowledge of the possible consequences of children seeing their parents intoxicated (17).

The purpose of this study was to examine whether boys and girls who in their early teens (or before) had seen their parents intoxicated reported more high-risk use of intoxicants in their later teens than those who had not had such experiences. We also wanted to study the importance of the frequency of the adolescents seeing their parents intoxicated, and whether the associations differed between girls and boys .

Material and method

As part of the Nord-Trøndelag health study (1995–1997), pupils at all lower secondary and upper secondary schools in the county were invited to take part in the Ung-HUNT 1 study (T1). A total of 4 743 (95%) participated from lower secondary schools. Four years later (2000–2001), pupils in the final two years at all upper secondary schools in the county were invited to take part in the Ung-HUNT 2 study (T2). Of the 2 969 pupils from these two years who had participated in Ung-HUNT 1, 2 399 (81%) also

Main points

- Adolescents who had seen their parents intoxicated reported more high-risk use of intoxicants at the end of their teenage years.
- The association was more evident among boys than among girls.

participated in the Ung-HUNT 2 study, and these pupils make up the study cohort. The study is based on self-reported questionnaire data. Participation was voluntary, and the pupils submitted their consent in accordance with the prevailing guidelines. The study was approved by the Regional Committee for Health and Research Ethics.

Parental intoxication

In 1995–1997 the pupils were asked: «Have you at any time seen either of your parents intoxicated?» There were five response categories: 1. Never; 2. Occasionally; 3. A few times a year; 4. A few times a month; 5. A few times a week. Categories 4 and 5 were combined in the analyses since the number in each category was low. Parental intoxication was applied both as a binary variable (seen/not seen), and as a variable with four categories to investigate whether the number of times the adolescents had seen their parents intoxicated affected the outcome variables. The category «Never seen parents intoxicated» was used as a point of reference in all analyses.

Use of intoxicants

High-risk use of intoxicants was defined as repeated intoxication, frequent alcohol use and experimenting with hash or similar substances. All outcome variables were used as binary variables.

The pupils were asked if they had ever been intoxicated from drinking alcohol. There were five response categories: 1. No, never; 2. Yes, once; 3. Yes, 2–3 times; 4. Yes, 4–10 times; 5. Yes, more than 10 times. Drinking to intoxication more than ten times was defined as «repeated intoxication».

They were also asked: «How often do you currently drink alcohol?» There were five response categories here too: 1. Never; 2. Less than once a month; 3. Less than every other week, but more often than once a month; 4. Every other week; 5. Every week or more frequently. Drinking alcohol every week or more frequently was defined as «frequent alcohol use».

Drug use was measured by a simple Yes/No question: «Have you ever experimented with hash, marihuana or similar substances?»

Other explanatory variables

The parents' level of education and the age of the adolescents were considered as possible confounding variables and these were controlled for in all multivariate analyses. This was done because the use of intoxicants in teenage years increases with age, because more of those in the oldest age groups had seen their parents intoxicated (18), and because adult alcohol consumption rises with increasing length of education (19). The education variable was based on the pupils' reporting of their parents' highest completed education. The parents' education was grouped in five categories: 1. Primary and lower secondary school; 2. Upper secondary school with vocational subjects, high school; 3. Upper secondary school with general subjects, high school; 4. University college/university education of less than four years' duration; 5. University college/university education of four years or more. The response categories were defined into two education levels: categories 1–3 were defined as low education, and categories 4–5 were defined as high.

Age was used as a continuous variable. There are other possible confounding variables for which we were unable to control in this study. These are discussed in the last part of the article.

Failure to answer

Out of 2 399 adolescents, a total of 107 failed to answer the question about parental intoxication, 37 the question about their own intoxication, 93 the question about how frequently they drank alcohol, and 120 the question about whether they had experimented with drugs.

Statistics

PASW 18 software was used for all analyses, and descriptive statistics were used to describe the distribution of exposure and outcomes. Two sets of analyses were conducted: one with a binary exposure variable («Seen parents intoxicated»: Yes/No), and one with a four-category exposure variable. Each outcome variable was examined separately by means of logistic regression, with the participants' age and the parents' level of education controlled for. The analyses were also stratified by gender, and tests were carried out for interactions between independent variables.

Results

The study comprised 1 115 boys and 1 284 girls of an average age of 14.4 (SD 0.8 year) at start-up and 18.3 (SD 0.7 year) at follow-up.

Table 1 shows the distribution of parental intoxication (exposure) and high-risk use of intoxicants among adolescents (different outcome variables). In 1995–1997, 51% of the adolescents reported they had seen their parents intoxicated once or more. The reporting was almost identical for both girls and boys. In 2000–2001, 73% of the participants reported having been intoxicated more than ten times (Table 1), while 20% stated that they drank alcohol weekly or more frequently – 25% of the boys and 16% of the girls.

Experimenting with drugs was reported by 15% of the boys and 14% of the girls. Repeated intoxication was more common among boys if their parents had a low level of education (76% versus 69%, p = 0.012), while having experimented with drugs was more common among boys whose parents had taken higher education (18% versus 12%, p = 0.008). Table 2 shows the association between the degree of exposure to parental intoxication and the adolescents' use of intoxicants.

Repeated intoxication

More adolescents who had seen their parents intoxicated reported that they had been intoxicated more than ten times compared with adolescents who had not seen their parents intoxicated. This particularly applied to boys (OR 3.7; 95% CI 2.7–5.1), but also to girls (OR 2.0; 1.5–2.6). The association was significant for both genders, regardless of how frequently they had seen their parents intoxicated. There was also a tendency for the association to become stronger according to how often the adolescents had seen their parents intoxicated, but the confidence intervals were overlapping (Table 2).

The parents' education and the age of the adolescents were controlled for in the analyses. The parents' level of education was not statistically significantly associated with repeated intoxication in multivariate analyses. Independently of all other variables, a higher age was associated with repeated intoxicati-

Table 1 Number and percentage of adolescents who in 1995–1997 reported they had seen their parents intoxicated (exposure) (N = 2 292), and high-risk use of intoxicants four years later

	All N = 2 292		Girls n = 1 229		Boys n = 1 063	
	Number	(%)	Number	(%)	Number	(%)
Seen parents intoxicated (1995–1997)						
Never	1 120	(49)	597	(49)	523	(49)
Occasionally	739	(32)	411	(33)	328	(31)
A few times a year	341	(15)	183	(15)	158	(15)
A few times a month/week	92	(4)	38	(3)	54	(5)
High-risk use of intoxicants (2000–2001)[1]						
Intoxicated >10 times	1 716	(73)	917	(73)	799	(73)
Drink alcohol weekly or more frequently	459	(20)	196	(16)	263	(25)
Experimented with drugs	336	(15)	177	(14)	159	(15)

[1] The three questions were not answered by 37, 93 and 120 Adolescents respectively

Table 2 Odds ratio (OR) with 95% confidence interval for high-risk use of intoxicants in late teens and observed parental intoxication, adjusted for age and parents' education

Outcome	Seen parents intoxicated	All			Girls			Boys		
		OR	95% CI	P-value	OR	95% CI	P-value	OR	95% CI	P-value
Repeated intoxication	Never seen parents intoxicated	1. 0			1. 0			1. 0		
	Occasionally	2. 3	1. 8–2. 9	< 0. 001	1. 6	1. 2–2. 2	0. 002	3. 6	2. 5–5. 3	< 0. 001
	A few times a year	3. 1	2. 2 –4. 4	< 0. 001	3. 0	1. 8–4. 9	< 0. 001	3. 3	2. 0–5. 4	< 0. 001
	A few times a month/week	6. 5	2. 8–15. 1	< 0. 001	4. 9	1. 5–16. 3	0. 010	8. 4	2. 6–27. 7	< 0. 001
Frequent alcohol use	Never seen parents intoxicated	1. 0			1. 0			1. 0		
	Occasionally	1. 3	1. 0–1. 7	0. 045	1. 0	0. 7–1. 5	0. 928	1. 7	1. 1–2. 4	0. 007
	A few times a year	1. 9	1. 4–2. 6	< 0. 001	1. 2	0. 8–2. 0	0. 423	2. 9	1. 9–4. 4	< 0. 001
	A few times a month/week	3. 8	2. 4–6. 2	< 0. 001	2. 4	1. 1–5. 2	0. 030	5.0	2. 7–9. 4	0. 000
Experiment-ed with drugs	Never seen parents intoxicated	1. 0			1. 0			1. 0		
	Occasionally	1. 8	1. 3–2. 4	< 0. 001	1. 4	0. 9–2. 1	0. 100	2. 4	1. 6–3. 8	< 0. 001
	A few times a year	2. 0	1. 4–2. 9	< 0. 001	1. 6	1. 0–2. 7	0. 050	2. 7	1. 6–4. 7	< 0. 001
	A few times a month/week	3. 0	1. 7–5. 2	< 0. 001	3. 1	1. 4–7. 0	0. 005	3. 1	1. 4–6. 9	0. 006

on among both the boys (OR1.3; 1.1–1.6) and the girls (OR 1.2; 1.0–1.4).

Frequent alcohol use

Drinking alcohol weekly or more often was associated with parental intoxication among the boys (OR 2.2; 1.6–3.0) but not among the girls (OR 1.1; 0.8–1.6). Having seen parents intoxicated a few times a month/week was associated with frequent alcohol use for both genders (Table 2). Neither parental education nor age was associated with frequent drinking in multivariate analyses.

Drugs

Experimenting with drugs was associated with parental intoxication among both the boys (OR 2.6; 1.7–3.9) and the girls (OR 1.6; 1.1–2.2). Having seen parents intoxicated occasionally was associated with experimenting with drugs among the boys, but not among the girls (Table 2), while having seen their parents intoxicated a few times a month or a week was associated with experimenting with drugs for both genders (Table 2).

A significant interaction was found between parental intoxication and education regarding boys experimenting with drugs ($p = 0.021$). There was a greater risk of boys with parents with high education who they had seen intoxicated having experimented with drugs (OR 3.9; 2.2–6.8) compared with boys who had never seen their parents intoxicated. Age, independently of all the other factors, was significantly associated with experimenting with drugs for both the boys (OR 1.8; 1.4–2.3) and the girls (OR 1.5; 1.2–1.9).

Discussion

In this study associations were found between lower secondary school students reporting having seen their parents intoxicated and their own repeated intoxication and experimentation with drugs four years later. This applied to both boys and girls. There was also an association between parental intoxication and drinking alcohol frequently for boys.

The study does not reveal how the experience of seeing one's parents intoxicated can explain these findings, but the behaviour may be a consequence of a type of modelling (10, 12, 20). Parents are examples through their conduct and their way of filtering and interpreting social norms and values (21, 22). Seeing parents drink until they are intoxicated may be interpreted as a sign that it is acceptable to drink alcohol and that intoxication is part of drinking.

Another explanation may be that parents' substance-related behaviour can put children at psychological, biological or environmental risk (7). This may translate into stress factors that make adolescents more susceptible to substance use. Studies show that children who grow up with parents who abuse alcohol run a greater risk of experiencing traumas and difficult life events (23). The fact that parents drink until they are intoxicated can represent a stressful situation for children. This also applies to single episodes. The more frequently parents allow themselves to be seen in an intoxicated state the more grounds there are to believe that this causes stress in childhood and adolescence. In line with this, our study showed a general tendency that having seen one's parents intoxicated many times was more strongly associated with a higher risk of substance use. This applied to both boys and girls.

Nonetheless there is reason to assume that only a limited percentage of the adolescents who were included in this study had experienced substance abuse and addiction on the part of one or both parents. A Norwegian study set the lifetime prevalence of alcohol abuse and alcohol addiction at 14% and 9% respectively for adults over the age of 18 in Oslo (24). At the age of 13–15, approximately half of all the adolescents in our study had see their parents intoxicated.

Common genetic disposition may be a factor that explains similar drug-related behaviour between the generations, but this was not examined in this study. With regard to prevention, children with a genetic disposition for problems with intoxicants will have a special need for protection against negative influences in their environment.

The findings were less consistent with respect to gender for the group of adolescents who had only occasionally seen their parents intoxicated. For the boys there was an association between having experienced parental intoxication and a high-risk use of intoxicants – regardless of the number of times they had seen their parents intoxicated. This may be interpreted as the possibility of boys' drinking behaviour being influenced by that of their parents to a greater extent than girls'. Other research has shown that health and behavioural problems associated with alcohol use in adolescence is unequally divided between the genders (25). It may be that parental intoxication generates other effects and entails a different psychosocial risk for girls than it does for boys. In line with international research, figures from HUNT show that adult men drink more and report more problematic drinking than women (18). Fathers can thus be regarded as more visible role models for alcohol consumption than mothers, which may explain why parental intoxication is more strongly associated

with boys' use of intoxicants than with girls'.

However, the HUNT 3 study (from 2006–2008) shows that women's consumption of alcohol has increased more than men's during the last decade (18). In this study it was not possible for us to examine the effect this may have on girls' use of intoxicants, but this is an interesting issue for further research. The effect of the parents' level of education and parental intoxication with respect to having experimented with drugs also varied between girls and boys: high education was associated with a higher probability of boys using drugs, but not girls. Other Norwegian studies have found no association between the use of hash in teenage years and parents' level of education (26).

Strength and limitations

The Ung-HUNT 1 and Ung-HUNT 2 studies contain data from large sections of the adolescent population. Prospective data sets provide a unique potential to study the extent to which exposure is associated with illness or adverse health-related behaviour later in life. As far as we know, no other similar studies have been conducted in Norway.

The study's limitations are related to the fact that we have not been able to distinguish the parents' gender or whether biological parents, step-parents or other caregivers are referred to. Another weakness is that we did not have the opportunity to examine or control for other parental factors that may be assumed to be of importance for the adolescents' use of intoxicants. Examples of this are alcohol-specific rules at home (27), the degree of parental control (28), the presence of alcohol in the home (27) and whether alcohol is given to the children (29). In addition, it was not possible to control for the parents' mental health and hereditary genetic dispositions, or for the availability of alcohol.

The study is based on the adolescents' own experience of having seen their parents intoxicated. We have no definite knowledge of the extent to which they actually were intoxicated. Previous research indicates that there are grounds to trust what adolescents report about their parents' alcohol habits. A Norwegian study showed only small differences between adolescents' perceptions of their parents' alcohol use and the parents' self-reported consumption (30). The adolescents' perception of their parents' alcohol use also explained more of the variance in their own use of alcohol than their parents' reporting did.

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