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Alcohol use and mental distress in adults who grew up with parents with drug use problems. The interaction with socioeconomic status in The Tromsø Study.

MED 3950- Master thesis

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Preface

The purpose of this project was to investigate how adults who have had parents with problematic substance use managed into adulthood regarding socioeconomic factors and how their alcohol-use and symptoms of anxiety and depression was compared to the general population.

This project started as a dawning interest for psychiatry after having a lecture regarding substance abuse during my second year as a medical student. I found the topic very interesting and wanted to learn more about this as a medical field. I therefore contacted Terje Simonsen which was the lecturer during our second year, who put me in contact with my supervisor Jørgen Gustav Bramness, which is specialist in psychiatry and professor at UiT-The Arctic University of Norway. He had an idea for a project based on the population in The Tromsø Study and we started the process which ended up as this cross-sectional study.

I would like to give a special thanks to my supervisor Jørgen G. Bramness for all his patience and extensive amount of help and supervision. Also, a great thanks for always being positive throughout the process, it has been invaluable for this project.

Tromsø, August 2020

Lene Sjursen

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Summary

Introduction:

Children are constantly exposed to parental substance abuse and get experiences that affects them for the rest of their lives. It´s estimated that between 4% and 12 % of children live together with a substance abusing parent and might experience unpredictability, arguing, violence amongst other in everyday life. There is a comprehensive amount of studies that has investigated how growing up with a substance abusing parent affects them as children, but fare less taking into account how they manage into adulthood. This study therefore aimed to investigate the sociodemographic factors amongst these adults, how their self-reported alcohol-use and symptoms of anxiety and depression was compared to the general population, and how social class affected alcohol-use and mental distress.

Material and methods:

Data used in this study came from the population that participated in The Tromsø Study: Tromsø 7 which was implemented from 2015-2016 and included 21083 volunteer participants, where 1576 of them reported to have a parent with problematic substance use. Using cross-sectional design these 1576 was investigated for sociodemographic factors, AUDIT-score was used to determine level of alcohol-use whereas HSCL-10-score was used to quantify their level of anxiety and depression.

Results:

7.0 % of the population reported to have one or more parent with substance abuse, 36.2 % of them (n=530) had educational level above bachelor's degree and 53.1 % (n=769) reported a household income above 750 000 NOK. They had a significantly higher AUDIT-score at 15.1 (SD 3.34) and a higher HSCL-10-score at 1.41 (SD 0.47) compared to the general population.

Conclusion:

Adults with reported parental substance abuse had a significantly higher level of education, higher rate of fulltime work and a higher level of income compared to the general population. They also reported a higher consume of alcohol and higher level of symptoms of anxiety and depression.

1 Introduction

1.1 Children growing up with parental drug use

1.1.1 The extent of this group

All around the world there are children who face parental drug use every day, and experience things affecting them for the rest of their lives. It is difficult to estimate how many on a world basis this affects, as it is most likely only approximately 10 % of adults diagnosed with substance use disorder (SUD). Furthermore, people with problematic drug use are known not to participate in research to the same extent as the rest of the population. Additional factors that complicates the matter is that it´s difficult to estimate the number of children physically living together with a parent afflicted by problematic drug use and to which extent this affects the children. This shows that there are several different factors affecting the estimated number of this group (1).

In Norway we lack specific data on the number of children whose parents are diagnosed with SUD, but it´s estimated that somewhere between 50-150 000 children are living together with one or more parents with a problematic use of alcohol (2). A Swedish cross-sectional study from 2013 estimated that 4.6 % of children in Sweden grew up with at least one parent with a SUD, where the overweight had an alcohol use disorder (3). This represents around 90 000 children and this is consistent with the Norwegian estimated interval. A study from the United States estimated that as much as 12.5 % of the children had parents with a SUD (4). The total number of children living together with a parent that have a problematic alcohol/substance use is most likely higher, not only caused by the lack of people being diagnosed, but also because there is a not an established agreement regarding how to approach this group in relation to studies (3).

In 2009 it was published an extensive report from SIRUS (Norwegian Institute for Alcohol and Drug Research, now a part of the Norwegian Institute of Public Health) stating that approximately 130 000 adults had experienced negative consequences associated with their parents or partners problematic alcohol use. This constitutes 2.7 % of the adult population in Norway (2). As pointed, there is a lot of uncertainty regarding the exact number of children and adults with experience of problematic drug use amongst their parents. It´s likely to believe that this prevalence is underestimated and also varying between different countries.

1.1.2 General impact on children

Children experiencing parental drug use might grow up in dysfunctional families, where everyday life can be characterized by unpredictability, low social functioning and insecurity. Different studies indicates that these parents have a parenting-style that is not favourable for a good child-outcome (5, 6). They exhibit a behaviour that may be unpredictable, and more often respond inadequately to their children which the child can experience as very frightening. These parents have been shown to be less available for their children, both through emotional inaccessibility and physically absence (7). As a result of unfavourable parenting behaviour, children of SUD parents more often undergo insecure attachment. Secure attachment is crucial for normal emotional and psychological development in children, and insecurity can therefor lead to a disrupted psychosocial, emotional and behaviour development (8). This is probably contributing to the adverse outcomes seen in these children; emotional and mentally problems like low self-esteem, anxiety, anger and the feeling of being left to themselves (6, 9-11).

Arguing, violence and physical harassment are negative factors that these children are exposed to in a greater extent than the rest of the population (12). They have a higher risk of enduring neglect and maltreatment by their parents, and studies has demonstrated that if their mother herself has experienced neglect during her childhood this contributes to a bad parenting behaviour towards her own children (8). This can be considered as an environmental vulnerability that may contribute to perpetuation of risk factors amidst their children. As a result of these children experiencing neglect and maltreatment to a greater extent, they are also more likely to be taken out of their home and placed in foster care (6, 13). Roscoe, Lery and Chambers found in a US study that this was due to the safety threats that the children is exposed to; especially parental inability to cover their children's needs, their own emotional instability and situations where the child is exposed to drugs (13).

At group level different studies have indicated that children growing up with parental alcohol abuse seem to have a more aggressive behaviour, more learning disabilities and a decreased tolerance to others (7, 14, 15). Their school performance seems to be lower compared to other children, which is thought to be related to their greater extent of learning disabilities, attention deficit and also the lack of support from the family (10, 16). There is a comprehensive amount of studies revolving the impact of parental drug use on

children's school performance, but barely any studies showing how they manage into adulthood regarding education level, income etc.

Children growing up together with at least one parent or caregiver with problematic drug use are more likely to sustain various negative factors like insecure attachment, maltreatment, physical and mental abuse, violence, dysfunctional family relationships and more. Consequently, their risk of developing SUD, mental illness, lower education and unemployment are higher compared to children that does not have parents with drug use problems (4, 6, 7, 17).

1.1.3 Heredity of substance abuse

Children living together with parents with a problematic use of drugs is constantly risking numerous negative impacts and outcomes, amongst them a risk of developing an addiction to drugs themselves (1, 10, 11, 18, 19). It seems that this heredity of addiction can be related to both genetic factors and environmental factors, e.g. morals and attitudes about drug use that they involuntarily get from their parents. The genetic component of addiction is complex and not fully understood at gene level, but studies on families and twins indicate that there is a genetic vulnerability which is inheritable (20, 21).

A genetic vulnerability combined with triggering environmental factors like reduced attachment between the child and caregivers during infancy, lacking sense of security during childhood and unpredictable circumstances of living with a parent using drugs can all be crucial to an individual´s potential for developing an addiction. A Swedish study found that genetic factors have a stronger impact on offspring drug abuse than environmental factors, which suggests that the inherited genetic vulnerability is of greater importance (22). Because these children grow up in an environment characterized by different negative events, this can be considered as an inherited vulnerability that is amplified by experiences throughout the childhood (7, 8).

Studies have also found that adults with a problem regarding use of alcohol more often came from homes where the father had a drinking problem rather than the mother. This testifies that there might be a gender difference (23). Others have found that it is of greater importance whether it is one or both parents that have drug use problems, rather than it being the mother or the father (17, 19). Mellentin et al. found that the risk of developing a

SUD when only one of the parents had an alcohol use disorder (AUD) was increased by a factor of 1.44, compared with a factor of 2.29 when both parents had an AUD (19). The same study did not find any significant gender difference.

1.1.4 Outcome in adulthood

The majority of research regarding parental drug use has focused on how the children are affected, from foetal life and into adolescence. There is less knowledge on how these children manage adulthood, and if they truly suffer more from SUD, have more depression and a lower socioeconomic status compared with the rest of the population. Also, it´s important to acknowledge that this group is very heterogenic, and outcome should be viewed in light of this (24).

What we do know is that the school performance amongst these children is worse compared with others (10, 16), and in relation to this we should expect that their educational level is reflected by this. A study from 1999 compared adult children of alcoholics (COAs) with non-COAs and found, as expected, a significant lower educational level amongst this group. They also discovered a lower rate of graduation from high school in the group of COAs (25). Others have also found lower academic achievement and fewer years of education in this group (10, 26, 27). In contrast to this, some of these children achieve higher education despite all risk factors, as is thought to do with resilience (28).

Income will in most cases be reflected by educational achievement. Findings concerning level of income is inconsistent, in which some studies have found a lower income level amongst children of drug users, while others have yet to find any difference (28). It´s worth noting that the study which failed to recognize any difference was a small sample study, and that larger studies like Hill et.al did find a significant lower income level (29). This emphasizes the importance of doing more studies in larger populations.

Adult children of drug using parents have an increased risk of developing a drug use problem themselves, and studies have shown that this group have a higher prevalence of dependence disorders compared with the general population (10, 18, 25, 29-31). This knowledge is well established over years, and has played a part in designing how support services around this group should be organized and where it´s most appropriate to apply different interventions (7, 32)

As reviewed earlier, various studies have investigated whether it´s of greater importance that the mother, the father or both parents have a problematic use of drugs and the results are inconsistent (33). Some findings suggest that the outcome for the child is more adverse when the mother is abusing, especially associated with neglect, abuse and decreased attachment (33). Other studies did not reveal any association between gender and children's risk of future drug abuse, but the risk seems to increase in line with the number of parents with a drug abuse (19).

Mental health amongst adult children of alcoholics/drug abusers have been target to a lot of studies the last decade, and there is evidence to say that in general their mental health is impaired compared to the rest of the population. They seem to be at higher risk of suffering from personality disorder, self-destructive behaviour, anxiety and depression amongst other (33-35). The amount of adverse experiences throughout childhood is shown to be determinant for the extent of mental illness (36). De Venter, Demyttenaere and Bruffaerts found in a review from 2013 (37) that the key factors for developing depression was child abuse, both physical, emotional and sexual. For anxiety disorder, sexual abuse and family violence was found to be of paramount importance. Children living with parental drug use are exposed in a greater extent to abuse in all forms as well as family violence, and are therefore a subject for numerous risk factors for developing mental illness as an adult (4, 6, 7, 17).

1.1.5 Resilience
Despite many negative outcomes associated with growing up with drug abusing parents, there are still some of the children/adults who grow up without developing or experiencing these negative outcomes. These individuals have a resilience, described as some personal factors that works in a protective way. The phenomena resilience has been target for broad amount research, and are by Rutter in 1985 described as the ability to adjust and cope with stressor that occurs during life (38). Factors that are considered as protecting are good self-esteem, not being exposed to violence in any form, having a supportive adult who can be trusted and a reliable social network (20, 38). Individuals who do not develop a problematic use of drugs themselves has also shown to experience fewer negative outcomes compared to those with drug abuse (39).

1.2 General risk factors for developing substance use problems

Approximately 8-12 % of the population in Norway has a problematic use of alcohol or other substances, and the incidence amongst men is twice as high compared with women (40, 41). Over the last few decades risk factors for developing a drug use problem has been identified through extensive research and has been used for prevention.

Individuals with so-called problematic behaviour from early childhood has been identified as being at higher risk of developing a substance use problem. The cause of this can be divided into two main parts; one being that this behaviour facilitates activities associated with risk. The other is the consequences a problematic behaviour can bring; poorly school performance, lower academic achievement and as a result a higher share of unemployment (41, 42). Personality characteristics like thrill-seeking and not trying to avoid harm as a child is associated with a higher potential for drug abuse later in life (43).

Unfavourable for developing a substance use problem is availability, the more substances available the higher the risk for trying and using it (42). This is important when considering how the authorities lead their drug policy, in which we know that the use, and hence the addiction, will increase if the respective drug gets more available (44). The consumption of alcohol and other drugs also seems to be higher in urban areas compared with rural areas, which can be explained by the disparity in availability (45).

Peers is known to be a predictor for the use of drugs, in which the risk increases if one experience rejection from others at the same age and if peers are using drugs themselves (42). Another factor that can increase the risk is the early onset of drug use. Hawkins, Catalano and Miller (42) found that individuals who starts earlier compared with the rest of their peers are at higher risk, and even more if they have an nonchalant attitude towards drugs. Attitudes related to drug-use can also be attributed to the family, as the internal environment in the family affects the risk. The risk is significantly higher amongst those who live with or have grown up within families characterized by conflict, violence, abuse and parental drug use (22, 42, 46)

1.2.1 Factors that predict our general use of alcohol

Our general use of alcohol is affected by factors in society as well as individual factors. The society's morality towards drugs will affect the general use, which is constantly changing.

Historical events can also induce changes on our drinking pattern, and this can explain why there´s a generational difference in the use of alcohol (47). The year of birth will influence the general use of drugs, as the individual is affected by the norms, conventions and laws of the decade in which they are born (47). Individual factors like personal events that takes place throughout our lives will also affect the general consume. The last decade several different population studies have shown that the overall consumption is decreasing, in almost all parts of the world (48, 49).

Compared with other European countries, Norway has the lowest alcohol-consumption per capita. This can be related to a strict alcohol policy led by the Norwegian authorities, like having a monopoly for alcohol containing more than 4,7 % and a relatively low allowed amount of blood-alcohol when driving (50). It is also a cultural context linked to this, which in case differs between countries and even more so between world regions. For instance, the contrast between the southern European drinking culture and the Scandinavian drinking culture. In Norway there´s not a widespread culture for drinking at work, and it´s even illegal to drink in public space and at various public events like football matches etc.

1.2.2 Sociodemographic factors in relation to substance use

There has been identified some gender-differences regarding use of alcohol, in which men drink more compared with women (41). Men also seem to develop problematic drinking behaviour and substance use disorders in a greater manner than women. In contrast to this, women with a problematic drug use have more medical issues than men, this has been attributed to gender differences in biological factors like how alcohol are processed in the body and how it affects the brain (51). In addition, men and women differ when it comes to what kind of drugs they use, where women tend to use more alcohol above other substances. In the use of stimulatory drugs like amphetamine, cocaine and ecstasy, men use more of this type compared with women (52).

Age seems to be a predictor for both the frequency and amount of drinking, where elderly people tend to drink more often than younger adults. On the other hand, younger people are more inclined to drink significant larger quantities when they drink compared with elderly (48, 53).

Education and income also seem to affect drug use, those with higher education and high income has shown to have a higher drinking-frequency. However, those with a lower educational-level tend to drink increased quantities at each drinking-episode (44, 50, 54). Looking at different professions, findings indicate that people working in oil and gas-industry, hotel, restaurants, entertainment industry and science drink more alcohol, both in work-related situations and else. The profession with the least use of alcohol in work-related occasions and else is people working in health- and care sector (55).

1.2.3 Social class in relation to substance use
Amongst people with a high education and income, the use of alcohol seems to be increased compared with lower social class (40). This is demonstrated through a higher drinking-frequency, a greater proportion of people drinking and a consumption within low to moderate (56). On the contrary, the higher social class do not seem to develop addiction in the same rate as those from a lower social class (40). Social gradient is the concept in which one recognize that the hallmarks of lower socioeconomic status is correlating with the changes in living habits. Alcohol-related mortality is augmented amongst those with lower socioeconomic status, and different studies suggest that it exists a negative social gradient related to both morbidity and mortality (56, 57).

1.3 General risk factors for developing mental distress

1.3.1 Mental distress in relation to sociodemographic
There has been identified gender differences in mental distress, specially related to outcomes between genders. The prevalence of suicide is significantly higher amongst men compared to women, and as previously mentioned men are overrepresented in the group with SUD (58). Gender differences can also be found in the different types of mental disorders, where women tend to have a higher prevalence of the more common disorders like anxiety and depression (58).

Looking at different groups of age, mental distress appear to be highest incident amongst younger adults and tend to continue into adulthood (59). This is related to the fact that most of the mental disorders debut at a young age, most of them before 30 years of age (60). It does not exist any exact overview concerning the age distribution of mental disorders in

Norway, and the two existing studies done on the Norwegian population did not give any conclusive results (45).

In relation to education and socioeconomic class, it´s well established that having a lower socioeconomic status is a risk factor for mental distress. Unemployment, no or lower education and financial problems are all factors associated with a lower socioeconomic class, and this both added together and put separately risk factors for a poor mental health (61, 62). As a natural consequence of this, higher income is shown to have a positive correlation with mental health (63).

1.3.2 Familial factors

Familial factors and functioning are also known as predictors or risk factors for mental illness. Growing up in a family where parents are arguing, talking about divorce and lacking parental skills increases the risk for developing mental illness (64). It´s also a well-established fact that children of parents with mental disorders have a higher risk for mental disorders themselves (65). Wille et al found that having a single parent also where significant for developing mental distress amongst with having a step-parent (66). The risk has also shown to increase in a summative matter, in which the risk for mental disorder increases with every risk factor present (65, 66).

1.3.3 Mental distress and substance use as a risk factor

Mental illness is recognized not just as a risk factor for developing problematic substance use, but is also known as a negative consequence or outcome of using it (20, 67). Anxiety and depression are known as the most common mental illnesses with the highest prevalence, both in the general population and amongst the ones with a SUD. Amongst those with SUD it is also shown that the prevalence of mental illness is significantly higher than in the general population, and the reason for this is considered multifactorial and a result of complex interaction (68). This especially applies to mental disorders characterized by a decreased amount of dopamine, like depression. Lack of dopamine can lead to dopamine-seeking behaviour like substance use and therefore be considered as a risk for developing a SUD (69).

Others have found that those having disorders like conduct disorders or hyperactivity disorders often have an increased consumption of drugs and alcohol. Personality traits like impulsivity and aggression appears do predispose for mental illness (70, 71).

Furthermore, using drugs itself can be a predictor for mental illness. Drug use in a greater extent can lead to an addiction-disorder over a period of time, but also the acute effects of using drugs can lead to mental health issues (67). An example is psychosis, which can be triggered by using drugs like cannabis, amphetamine etc (67).

1.3.4 Social class and mental health

The risk of developing mental disorder and the prevalence of these are higher in members of the lower social classes (66). Social mobility- a previously visited concept seem to be of great importance. Tiikkaja et al found in their population-based study that amongst sub-groups with increased social mobility, the prevalence of mental disorders seemed to decrease, and vice-versa (72). The idea that social mobility has a positive impact on the risk of developing mental disorders is consistent with other research findings about the power of socioeconomic status.

2 Aims

The aim of this cross-sectional study was to investigate self-reported mental health among adults who reported to have parents with problematic drug use. The study also aimed to investigate their self-reported use of alcohol. The specific aims of the study where:

1. What are the characteristics of adults who reported having parents with drug use problems?

2. Compared with the general population, how is the self-reported alcohol use amongst those who grew up with parental drug use problems? And how does social class affect the use of alcohol and symptoms of anxiety and depression?

3. How do adults who report having a parent with drug use problems compare to other adults regarding self-reported symptoms of anxiety and depression?

3   Material and method

3.1   Study population

The Tromsø Study is a prospective cohort study which explore the population of Tromsø which started in 1974 and are still ongoing. In total there has been completed seven surveys since 1974, and this cross-sectional study is based on the population which has participated in the Tromsø Study: Tromsø 7 from 2015-2016. Participants who were invited to this survey where all residents in Tromsø of the age 40 and older. They received an invitation and questionnaire per email regarding the study and in addition to the questionnaire they were also invited to meet for a physical examination including blood samples.

In total, the population in Tromsø 7 consist of 21083 from the age of 40 to 99. Of the 21083 who participated, there where 11074 women and 10009 men. Of these 20843 a total of 1576 reported to have a parent with problematic drug use, where 348 of these had a mother with drug use problems and 1228 had a father. The exact question asked in the questionary was if you had a mother or father who has or has had problems with substance abuse, where the optional answers was yes or unchecked.

This study is focusing on the group of adults that reported one or more parent with problematic drug use, which involve both legal and illegal substances. Initially we divided them into three groups; mother with abuse, father with abuse and both parents abusing. Some of the groups showed to have a relatively small number of cases and where merged together to ensure anonymity and significance. Therefore, the study population where divided into one group of those who reported to have one or more parent with problematic drug use and one group with those who did not report to have parents with drug abuse.

3.2   Measures

This study aimed amongst other to compare the socioeconomic factors amongst those who reported problematic parental drug use and those who did not report this, and the variables chosen where sex, age, education, profession and income. Sex was specified to number of women (%). The participants´ age was defined as their age at 31.12.2015, set as mean value with SD. For education the cut-off was set between bachelor's degree and higher education which included a master/university degree, specified as number with %. Furthermore, for

income we chose to set the cut-off at 750 000 NOK, which was the median income for the two groups.

For quantifying alcohol use AUDIT where used in Tromsø 7. AUDIT (Alcohol Use Disorders Identification Test) is a diagnostic screening tool for identifying problematic alcohol use, which content 10 questions regarding amount, frequency and consequences of alcohol use. For this parameter it was made a sum score for question 1-10 for each of the groups. For question 1-8 a participant where able to score from 0-4 points, for question 9-10 it was 0, 2 or 4 points. A total score from 8-13 points is considered as a pattern with risky or damaging use of alcohol, and a total score at 13 or more indicates a possible alcohol addiction. For this variable the case was included if the participant had answered at least seven out of total 10 questions, 17754 cases were included, 3329 cases excluded[a].

In Tromsø 7 symptoms of anxiety and depression where measured by using HSCL-10 (Hopkins Symptom Check List), which is a modified version of SCL-25 and consist of 10 questions. For this variable we made a mean score for the two groups. The mean score was a score between 1-4, were scores near 4 indicates a high symptom rate for anxiety and depression. For the Norwegian version of this test the cut-off is often set to 1.85, which indicates that a participant has symptoms of mental distress with a score of 1.85 or higher. As for AUDIT, the case was included if seven or more questions were answered by the participant, which resulted in 19284 cases included and 1259 excluded. HSCL-10 are in some cases used as an identifying tool for patients that require further diagnosing, this is based on the sum score and called Global Severity Index (GSI). GSI is calculated by taking the total sum score, dividing it on number of questions which in HSCL-10 is 10 questions.

3.3 Statistical method

The statistical analysis in this study where done by using IBM SPSS Statistics version 26. Data were analysed by descriptive statistical methods. For categorical variables N is stated in % in bracket, while mean is indicated with standard deviation in bracket.

For bivariate correlations Chi-Square Test of Independence was used for comparison of categorical variables. ANOVA was used for comparison of categorical and continuous

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[a] Participants that reported no use of alcohol is not counted in AUDIT-cases, which can give an underestimated number of cases that does not consume alcohol

variables. The dataset is considered so large that one assumes normally disturbed data, and therefore it was used parametric tests. Exact p-values is given with three digits.

3.4 Ethical approval

All participants in The Tromsø Study has signed a written consent in which they give permission to use the collected information in research. At first, we applied directly to The Tromsø Study to get access to the dataset for this study, which was approved in September 2019. The Tromsø Study has concession from The Norwegian Data Protection Authority (DPA) and also approval from Regional Committees for Medical and Health Research Ethics (REK) to conduct this population study. In addition to this we also had to apply REK specifically for this project, and the study was accepted in June 2019 (Reference: 2019/1140/REK nord). See appendix for document.

This study is focusing on data regarding parental drug use, both legal and illegal, and are therefore handling personal information about third persons. There is founded an agreement between UiT- The Arctic University of Norway and The Tromsø Study that all projects containing personal information about a third person should be done an impact assessment on. As a result of this, DPA demanded a Data Protection Impact Assessment (DPIA) for this study with project number 451510. The DPIA was conducted and approved by Norwegian Centre for Research Data (NSD) in April 2020.

4   Results

In Tromsø 7 there where 1479 adults who reported having one or more parent with problematic drug use, which represent approximately 7 % of the population in the study. 796 participants (53.8 %) who reported parental abuse were women, and the group had a mean age of 53.6 years. Amongst those with parental abuse 530 (36.2 %) reported educational level above bachelor's degree, compared to 5582 (29.3 %) in the group with no parental abuse. 769 (53.1 %) had a household income above 750 000 NOK, whereas 8938 (48.2 %) reported the same in the group with no parental abuse.

Table 1. Sociodemographic factors amongst those with and without reported parental drug abuse.

		No parental drug abuse N= 19364 (91.8)	Parental drug abuse N= 1479 (7.0)	P-value
Sex (women)	N (%)	10158 (52.5)	796 (53.8)	p=0.312[a]
Age (years)	Mean (SD)	57.6 (11.4)	53.6 (9.7)	p<0.001[b]
Education (above bachelor's degree)	N (%)	5582 (29.3)	530 (36.2)	p<0.001[a]
Profession (fulltime job)	N (%)	11054 (57.4)	994 (67.3)	p<0.001[a]
Income (≥ 750 000 NOK)	N (%)	8938 (48.2)	769 (53.1)	p<0.001[a]

[a] Chi-square test of independence [b] Students T-test

Compared with the general population, those who reported parental problematic drug use had a significant higher AUDIT-score (p<0.001). The general population had a mean AUDIT-score at 14.0 (SD 2.76), whereas adults with parental abuse had a mean score at 15.1 (SD 3.34). In addition, the general population had a significant lower HSCL-10 mean score (p<0.001) at 1.28 (SD 0.37), compared to mean score at 1.41 (SD 0.47) in the group with parental drug abuse.

[a] Chi-Square test of independence
[b] Students T-test

Table 2. Self-reported alcohol use and symptoms of anxiety and depression the last 12 months.

		No parental drug abuse	Parental drug abuse	
		N= 19364 (91.8%)	N=1479 (7.0%)	P-value
Sum score AUDIT 1-10	Mean (SD)	14.0 (2.76)	15.1 (3.34)	p<0.001[b]
Felt highly intoxicated/drunk last 12 months (weekly or more often)	N (%)	66 (0.4)	20 (1.5)	p<0.001[a]
Sum score HSCL-10	Mean (SD)	1.28 (0.37)	1.41 (0.47)	p<0.001[b]
"Case" according to GSI (case)	N (%)	1602 (8.4)	227 (15.5)	p<0.001[a]

[a] Chi-Square test of independence [b] Students T-test

Those with parental AUD/SUD who reported higher education had a lower AUDIT-score and also a lower HSCL-10 score compared with participants with lower educational-level, but the results were not statistically significant.

Table 3. AUDIT and HSCL-10 score in relation to education.

		No parental drug abuse			Parental drug abuse			P-value	P-value
		No higher education	Higher education	P-value	No higher education	Higher education	P-value	No higher education	Higher education
		N= 13438 (70.7%)	N=5582 (29.3%)		N=943 (63.8%)	N=530 (36.2%)			
AUDIT score	Mean (SD)	13.90 (2.85)	14.03 (2.71)	0.006	15.02 (3.55)	14.85 (3.21)	0.384	<0.001[b]	<0.001[b]
HSCL score	Mean (SD)	1.28 (0.38)	1.28 (0.36)	0.288	1.42 (0.48)	1.39 (0.45)	0.200	<0.001[b]	<0.001[b]

[a] Chi-Square test of independence [b] Students T-test

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[a] Chi-Square test of independence
[b] Students T-test
[a] Chi-Square test of independence
[b] Students T-test

Figure 1. The relationship between AUDIT-score and education amongst those with and without reported parental substance abuse.
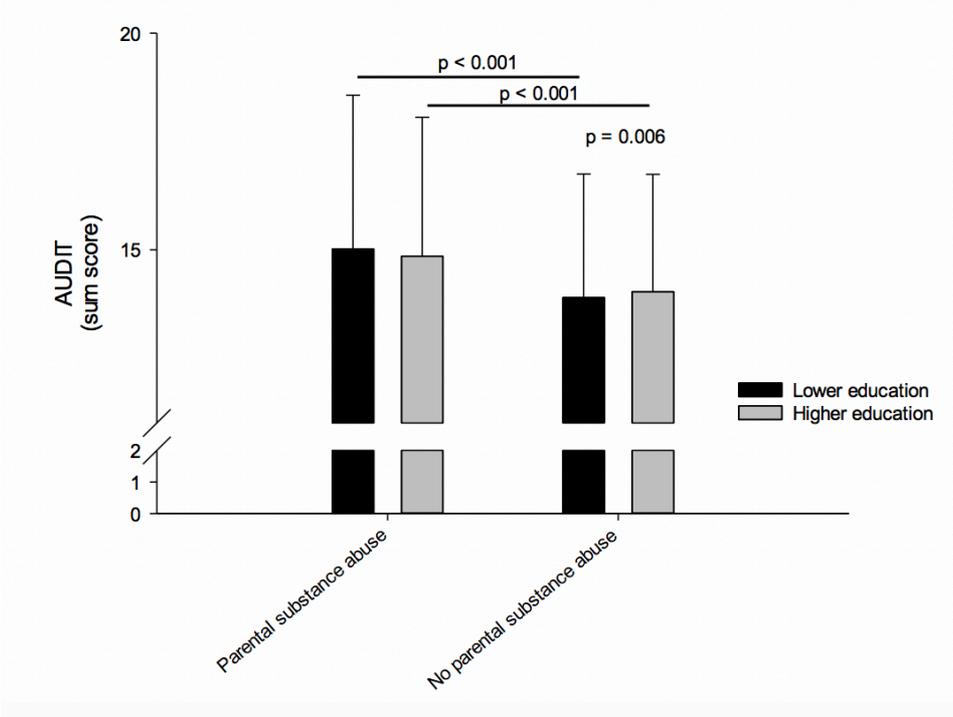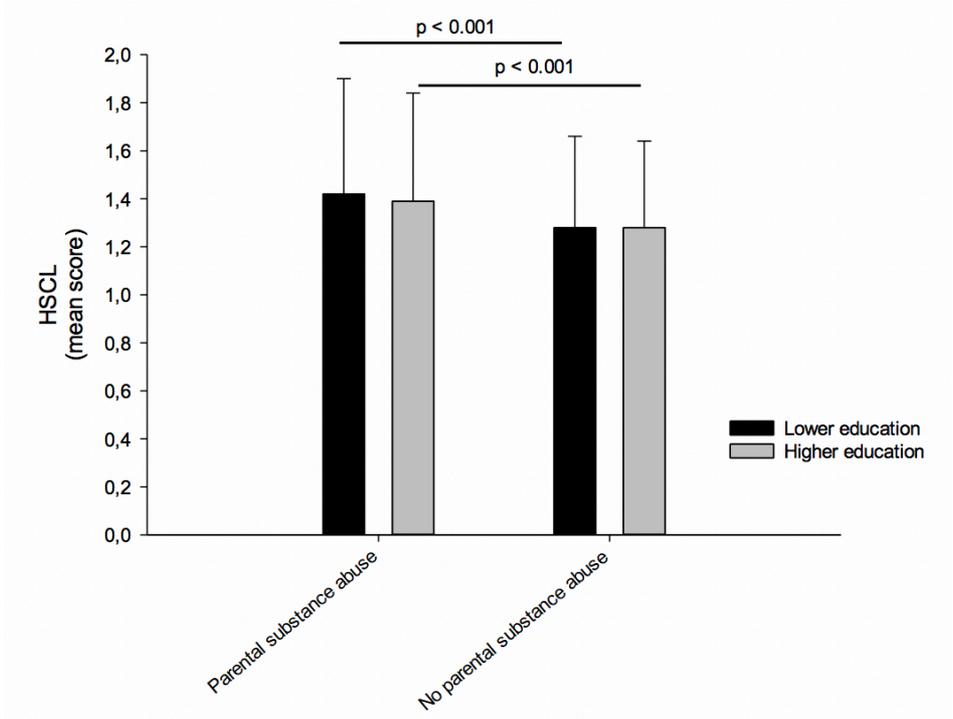

Figure 2. The relationship between HSCL-score and education amongst those with and without reported parental substance abuse.

Participants who reported an household income above 750 000 NOK in the group of parental drug abuse had significantly lower HSCL-10 (1.36) score compared to those in the same group with an income below median (1.45) (p<0.001), but compared to those in the general population with income above median their HSCL-score was significantly higher with a mean score at 1.25 in the general population (p<0.001).

Table 4. AUDIT and HSCL-10 score in relation to income.

		No parental drug abuse			Parental drug abuse			P-value	P-value
		Income below median (<750 000 NOK) N=9608 (51.8%)	Income above median (>750 000 NOK) N=8938 (48.2%)	P-value	Income below median (<750 000 NOK) N= 679 (46.9%)	Income above median (>750 000 NOK) N=769 (53.1%)	P-value	Income below median (<750 0 00 NOK)	Income above median (>750 00 0 NOK)
AUDIT score	Mean (SD)	13.70 (2.92)	14.30 (2.92)	<0.001	14.93 (3.81)	15.03 (3.10)	0.598	<0.001[b]	<0.001[b]
HSCL score	Mean (SD)	1.31 (0.41)	1.25 (0.33)	<0.001	1.45 (0.51)	1.36 (0.43)	<0.001	<0.001[b]	<0.001[b]

[b] Students T-test

Figure 3. The relationship between AUDIT-score and income amongst those with and without reported parental substance abuse.
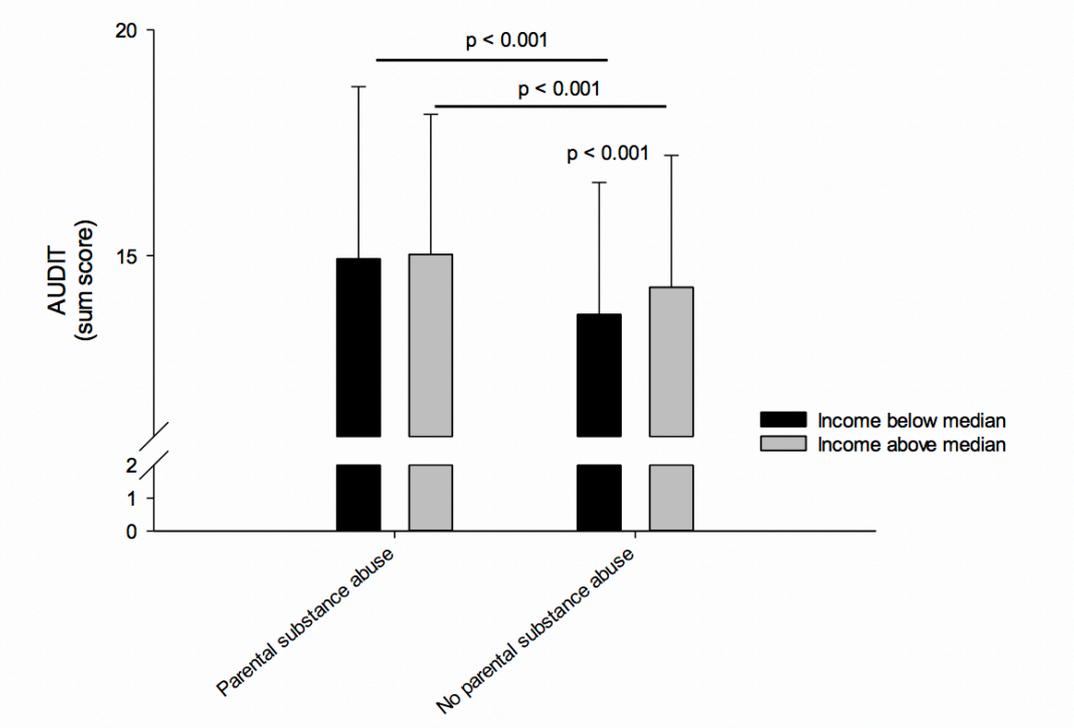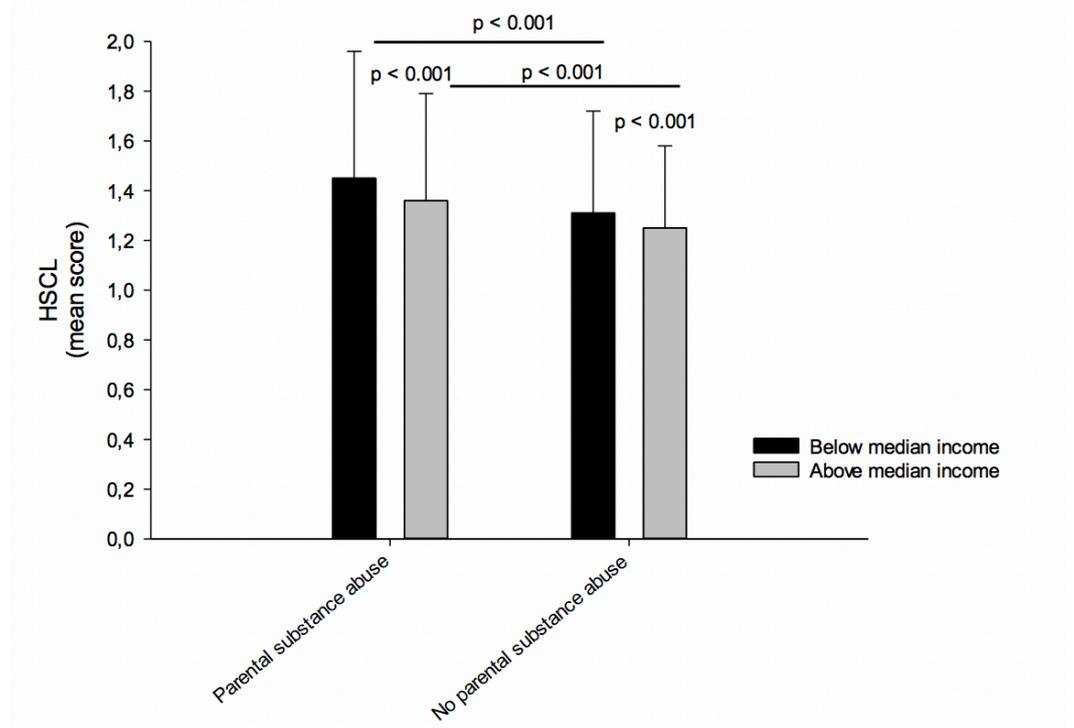

Figure 4. The relationship between HSCL-score and income amongst those with and without reported parental substance abuse.

5 Discussion

In this study there was 1479 participants who reported to have one or more parent with problematic substance abuse, which represent 7.0 % of the population in Tromsø 7. Furthermore, we found that adults who report having at least one parent with problematic substance use have a higher level of education, higher rate of fulltime work and have a higher level of income compared with the general population. Despite this, they also report having more anxiety and depression and a higher alcohol consume. In the general population, the use of alcohol increased with educational level and income. This difference was not found in the higher alcohol using group with parental substance use problems. Furthermore, level of depression and anxiety symptoms seemed to decrease with income, but not so with education in the general population. The same relationship between anxiety and depression symptoms, educational level and income respectively was found for those growing up with parental substance abuse, although with symptoms at a higher level.

5.1 Incidence

7.0 % reported to have or have had one or more parent with substance abuse in this study. It has shown to be difficult to give an exact number of children exposed to parental substance abuse and the number has shown to variate between 4.6 % - 12.5 % in several different studies (2, 3). Our number found in this study lies within this interval and does not deviate increasingly from earlier findings. In Tromsø 7 the participants have given their subjective meaning regarding their parents use of substances and are not based on registers for diagnosis, treatment or other objective measures for problematic use of substances. The estimated incidence in this study will therefore be based on each participant personal meaning regarding their parent's substance use. This is problematic because there will be a selection bias regarding who will answer the questionary in the first place, but also based on the lack of systematic measures regarding abuse of substances. Also, it´s important to point out that different studies have used different methods for measurements; both Raninen et al. and Lipari et al. have done cross-sectional surveys using questions from DSM-IV, whereas Rossow et al. has used questionaries in a selected population (2-4).

It´s therefore likely to assume that this estimate represents an incidence based on personal experience amongst a selected population which has participated in Tromsø 7, which

probably can be the more healthy part of the population and therefore an underestimated incidence of how many who actually have parents with problematic use of substances.

5.2 Education and income

Adults in this study with parental substance abuse had a significantly higher level of education, more often had a full-time job and also a significantly higher percentage with income above median level at 750 000 NOK. This findings stands in great contrast to previous research, which in most cases have found a significant lower educational level, lower income and employment amongst those with parental substance abuse (25-27). This has been discussed as a result of their decreased school performance, increased learning disabilities and attention deficit which mostly will lead to a lower educational level and additionally decreased income.

Resilience has been thought to be an explanation for the phenomena where some children of substance abusers seems to avoid negative outcomes despite their experiences. This is described as different protective personal factors such as good self-esteem, avoiding exposure to violence and having an adult for support (38). This might be a contributing factor to the results found in this study, but one cannot say to which degree this is affecting the result as this is not variables taken into account in this study.

The characteristics of the population who participated in The Tromsø Study will also could affect the results and can be biased based on what we know about participation in surveys amongst those with substance use problems themselves. This group is known to have a decreased participating-rate in research projects, which can lead to a false increased level of income and education as the group with the heaviest substance abusers and heaviest depression most likely are not included in this survey.

Another contributing factor to this counteracting finding can be the welfare society we do have in Norway, where the majority of the inhabitants on a general basis have good living conditions. We have a social safety net consisting of the Norwegian Government with several different social benefits, which can contribute to a population with increased living conditions and also better conditions for social mobility despite original social class.

Furthermore, the mean age of the participants were respectively 57.6 years in the group with no parental substance abuse and 53.6 years in the group with reported parental substance abuse. This is of importance regarding educational level, which not reflects the present situation for the group as their age at the time they completed their education in most cases was lower. Income will in a much greater extent reflect the current situation and will in most cases be reflected by educational level, but it´s likely that some of the participants have an income that does not directly reflect their level of education.

Therefore, there is a probability that the results would have been different if the whole population in Norway participated in this kind of population-survey. One might think that the incidence of people with parental substance abuse would have been higher and as a result of a more representative number it´s likely that the educational level and also the level of income would have been decreased compared with the findings in this study if the whole population has been examined.

5.3 Alcohol use

This study also found that the self-reported alcohol use amongst those with parental substance abuse was significant higher compared to the general population. AUDIT-score amongst adults with parental substance abuse was 15.1 compared to 14.0 amongst the general population and represent a relatively big difference in alcohol use. This finding stands in line with previous research on the field, which also have found increased use of alcohol amongst those with a history of parental drinking or drug abuse (8, 9). Reilly et.al pointed out in their study the importance of the genetic component in addiction, which is discussed as genetic but also affected by the environment. Morals and attitudes are inherited by the children growing up together with parents with problematic substance use and it´s also discussed how other environmental factors is functioning as triggers to an inherited genetic component (21). Many of these children experience seeing their parents drunk or affected by other substances from early childhood and some of them also experience different degree of neglect and unpredictability. This is described by these children as particularly challenging because such behaviour from their parents is so

incomprehensible and therefor very difficult for children to understand and put in perspective (5).

It´s well established that people belonging to a higher social class also seems to have an increased use of alcohol compared to the general population, in which they have a higher drinking-frequency but a low-moderate consumption (40). People with a lower socioeconomic status has shown to drink less frequent, but report drinking higher quantities when they first drink (44). One could thus expect that children of parents with alcohol abuse based on social class would have a decreased use of alcohol, but for this group there will be other factors contributing to their use of alcohol both genetic and environmental. Furthermore, the result is not sensational seen in light of the fact that this group in this study actually report higher educational level and higher income.

Findings such as that adults with parental substance abuse seems to have a higher alcohol-use compared to the general population is of importance for prevention. Based on what we know about how addiction is inherited, both through genetic components but also environmental triggers, it appears of great importance to acknowledge that this should be a focus of interest for both national and international health authorities. With a more extended focus on this group it´s possible that some of these children could have been noted earlier and therefore avoided some negative outcomes which in case will be in a positive manner for both individuals but also the society, which use a lot of resources and money on this group.

5.4 Anxiety and depression
Compared with the general population, this study also found that adults with reported parental substance abuse had a significant higher HSCL-10 score at 1.41 compared to 1.28 in the general population. Their symptoms of anxiety and depression is overall higher, despite that they seem to have a higher income and higher level of education. The group with parental substance abuse also had a higher percentage of "cases according to GSI", where 15.5 % was a case compared to 8.4 % amongst the general population. Based on their background with parental substance abuse this adds to previous findings which has found that if you grow up in a family where there might be an excessive amount of arguing and you

have parents with lacking parental skills, the risk for mental distress will be higher compared to if you don't (64).

5.5 Relation to sociodemographic factors

Based on the findings that adults with parental substance abuse in this study had a higher level of education and a higher level of income, it might be tempting to assume that their use of alcohol would be lower and that they would have a decreased level of mental distress. That is however not the case in this study. As mentioned, the use of alcohol seems to increase with increasing socioeconomic status but paradoxically this group experience less negative health-outcomes compared with those in lower social class (57). Our results indicate that the level of alcohol use in adults with parental substance abuse is higher compared with the general population, which seen in light of their higher socioeconomic status would be accurate. But the elevated level of alcohol use seems to be flattened and one could speculate if there is some kind of roof-effect involved, in which they reach a specifically level of alcohol-use and stays stable at this level.

On the other hand, in relation to findings in this study that this group had a higher level of education and a higher level of income one could have expected that their level of mental distress would have been the same or lower compared to the general population. This is based on the well-established findings that socioeconomic status have a positive correlation with mental distress, where especially income seems to have a great impact on the risk for mental distress like anxiety and depression (61-63). This is discussed as a result of better living conditions, more available healthcare and a healthier lifestyle amongst those with higher socioeconomic status and also the fact that their basic needs is covered to a much greater extent compared to those with lower socioeconomic status (66). In this study we did not find the same relationship. Adults with parental substance abuse and higher level of income and education reported a higher level of anxiety and depression compared to the general population, but there were no significantly difference between the two groups what applies to education. There seems to be an association between income and anxiety and depression amongst those with parental substance abuse but there were not found any significant difference between the two groups. This indicates that in general it's the same

relationship between socioeconomic factors and mental health in both the group with and without reported parental substance abuse.

5.6 Strengths and limitations

One of the strengths in this cross-sectional study is considered to be the large population included in the study. The total population in Tromsø 7 was 21083, which accounted for 65 % of those invited. Furthermore, 1576 of these people reported to have had a one or more parent with problematic substance abuse. This gives a population that we consider as representative for a larger study population. If the response rate had been higher it might be likely that we would have had included cases with heavier depression, an increased amount of those with lower socioeconomic status and based on this that some of the association would have been different. It might be so that this population represent the healthiest ones and that this has affected the result, but it´s not possible to know to which degree this has affected the outcome.

Furthermore, this study is a cross-sectional study which only gives results for the exact time when the survey was completed and is therefore considered as a limitation in that the participants are not followed over a period of time. In addition, it´s likely to assume that despite the high number of participants there will be some cases that are not included in the study. As discussed earlier this can be both in relation to the fact that people with substance use problems does not participate in research to any great extent and will therefore be excluded from the survey. In addition, cases that were not complete were also excluded which indicates that there is a certain number of cases excluded from the population. Furthermore, its important no stress the fact that the participants has given their subjective meaning about their parents, which means that parents considered to have a problematic substance use is not based on validated methods but on each participant subjective opinion regarding their parents use of substances.

6 Conclusion

Adults who reported to have at least one parent with problematic substance use had a significantly higher level of education, higher rate of fulltime work and a higher income-level compared with the general population. They also reported higher consume of alcohol and a higher level of symptoms for anxiety and depression. Alcohol-use did not increase with educational level and income amongst those with parental substance abuse like it did in the general population. Level of anxiety and depression showed to decrease with income but was not affected by education amongst both adults with and without parental substance abuse.

References

1.   Torvik F, Rognmo K. Barn av foreldre med psykiske lidelser eller alkoholmisbruk: Omfang og konsekvenser2011.
2.   Rossow I, Natvig H, Moan IS. Nære pårørende av alkoholmisbrukere : hvor mange er de og hvordan berøres de? Oslo: Statens institutt for rusmiddelforskning, SIRUS; 2009.
3.   Raninen J, Elgán TH, Sundin E, Ramstedt M. Prevalence of children whose parents have a substance use disorder: Findings from a Swedish general population survey. Scandinavian Journal of Public Health. 2015;44(1):14-7.
4.   Lipari RN, Van Horn SL. Children Living with Parents Who Have a Substance Use Disorder. The CBHSQ Report. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 2013. p. 1-7.
5.   Wangensteen T, Halsa A, Bramness JG. Striving to understand substance use: a qualitative study with young people with parents with substance use disorder(SUD), and patients in SUD treatment. 2019.
6.   Barnard M, McKeganey N. The impact of parental problem drug use on children: what is the problem and what can be done to help? Addiction. 2004;99(5):552-9.
7.   Straussner SLA, Fewell CH. A review of recent literature on the impact of parental substance use disorders on children and the provision of effective services. Current opinion in psychiatry. 2018;31(4):363-7.
8.   Dunn MG, Tarter RE, Mezzich AC, Vanyukov M, Kirisci L, Kirillova G. Origins and consequences of child neglect in substance abuse families. Clinical Psychology Review. 2002;22(7):1063-90.
9.   Peleg-Oren N, Teichman M. Young Children of Parents with Substance Use Disorders (SUD): A Review of the Literature and Implications for Social Work Practice2006. 49-61 p.
10.   Sher KJ, Walitzer KS, Wood PK, Brent EE. Characteristics of children of alcoholics: putative risk factors, substance use and abuse, and psychopathology. Journal of abnormal psychology. 1991;100(4):427-48.
11.   Harwin J, Madge N, Heath S. Children affected by Parental Alcohol Problems (ChAPAPs) www.drugsandalcohol.ie2010 [Available from: https://www.drugsandalcohol.ie/13863/1/2010report-on-the-research-policy-practice-and-service-development-relating-to-chapaps-across-europe1%5B1%5D.pdf.
12.   Conners-Burrow NA, Johnson B, Whiteside-Mansell L. Maternal substance abuse and children's exposure to violence. J Pediatr Nurs. 2009;24(5):360-8.
13.   Roscoe JN, Lery B, Chambers JE. Understanding child protection decisions involving parents with mental illness and substance abuse. Child Abuse & Neglect. 2018;81:235-48.
14.   Johnson JL, Leff M. Children of Substance Abusers: Overview of Research Findings. Pediatrics. 1999;103(Supplement 2):1085.
15.   Martin CS, Earleywine M, Blackson TC, Vanyukov MM, Moss HB, Tarter RE. Aggressivity, inattention, hyperactivity, and impulsivity in boys at high and low risk for substance abuse. J Abnorm Child Psychol. 1994;22(2):177-203.
16.   Tarter R, Vanyukov M, Giancola P, Dawes M, Blackson T, Mezzich A, et al. Etiology of early age onset substance use disorder: a maturational perspective. Dev Psychopathol. 1999;11(4):657-83.
17.   -.

18.   Yule AM, Wilens TE, Martelon M, Rosenthal L, Biederman J. Does exposure to parental substance use disorders increase offspring risk for a substance use disorder? A longitudinal follow-up study into young adulthood. Drug Alcohol Depend. 2018;186:154-8.

19.   Mellentin AI, Brink M, Andersen L, Erlangsen A, Stenager E, Bjerregaard LB, et al. The risk of offspring developing substance use disorders when exposed to one versus two parent(s) with alcohol use disorder: A nationwide, register-based cohort study. J Psychiatr Res. 2016;80:52-8.

20.   Simonsen T. Rusmiddelavhengighet : lærebok for helse- og sosialfag. Bergen: Fagbokforl.; 2016.

21.   Reilly MT, Noronha A, Goldman D, Koob GF. Genetic studies of alcohol dependence in the context of the addiction cycle. Neuropharmacology. 2017;122:3-21.

22.   Kendler KS, Ohlsson H, Sundquist K, Sundquist J. The causes of parent-offspring transmission of drug abuse: a Swedish population-based study. Psychol Med. 2015;45(1):87-95.

23.   Pollock VE, Schneider LS, Gabrielli WF, Goodwin DW. Sex of parent and offspring in the transmission of alcoholism: A meta-analysis. Journal of Nervous and Mental Disease. 1987;175(11):668-73.

24.   Hinrichs J, Defife J, Westen D. Personality subtypes in adolescent and adult children of alcoholics: a two-part study. J Nerv Ment Dis. 2011;199(7):487-98.

25.   Jacob T, Windle M, Seilhamer RA, Bost J. Adult children of alcoholics: Drinking, psychiatric, and psychosocial status. Educational Publishing Foundation; 1999. p. 3-21.

26.   Nirenberg TD, Liepman MR, Begin AM, Maisto SA, Liebermann MP. Family History of Alcoholism in Males: Absence of Distinguishing Features for Treatment Matching. International Journal of the Addictions. 1990;25(10):1195-209.

27.   Mangiavacchi L, Piccoli L. Parental alcohol consumption and adult children's educational attainment. Econ Hum Biol. 2018;28:132-45.

28.   Harter SL. Psychosocial adjustment of adult children of alcoholics: A review of the recent empirical literature. Clinical Psychology Review. 2000;20(3):311-37.

29.   Hill EM, Ross LT, Mudd SA, Blow FC. Adulthood functioning: the joint effects of parental alcoholism, gender and childhood socio-economic stress. Addiction. 1997;92(5):583-96.

30.   Mathew RJ, Wilson WH, Blazer DG, George LK. Psychiatric disorders in adult children of alcoholics: data from the Epidemiologic Catchment Area project. Am J Psychiatry. 1993;150(5):793-800.

31.   Pandina RJ, Johnson V. Familial drinking history as a predictor of alcohol and drug consumption among adolescent children. Journal of Studies on Alcohol. 1989;50(3):245-53.

32.   Yoon S, Pei F, Wang X, Yoon D, Lee G, Shockley McCarthy K, et al. Vulnerability or resilience to early substance use among adolescents at risk: The roles of maltreatment and father involvement. Child Abuse Negl. 2018;86:206-16.

33.   Christoffersen MN, Soothill K. The long-term consequences of parental alcohol abuse: a cohort study of children in Denmark. Journal of Substance Abuse Treatment. 2003;25(2):107-16.

34.   Drake RE, Vaillant GE. Predicting Alcoholism and Personality Disorder in a 33-year Longitudinal Study of Children of Alcoholics. British Journal of Addiction. 1988;83(7):799-807.

35.   Hill SY, Tessner KD, McDermott MD. Psychopathology in offspring from families of alcohol dependent female probands: a prospective study. J Psychiatr Res. 2011;45(3):285-94.

36.   Hunt TKA, Slack KS, Berger LM. Adverse childhood experiences and behavioral problems in middle childhood. Child Abuse Negl. 2017;67:391-402.

37.   De Venter M, Demyttenaere K, Bruffaerts R. [The relationship between adverse childhood experiences and mental health in adulthood. A systematic literature review]. Tijdschr Psychiatr. 2013;55(4):259-68.

38.   Rutter M. Resilience in the Face of Adversity: Protective Factors and Resistance to Psychiatric Disorder. British Journal of Psychiatry. 1985;147(6):598-611.

39.   Wlodarczyk O, Schwarze M, Rumpf H-J, Metzner F, Pawils S. Protective mental health factors in children of parents with alcohol and drug use disorders: A systematic review. PLOS ONE. 2017;12(6):e0179140.

40.   Torvik FA, Reneflot A, Ostling GL, Skogen JC, Hauge LJ. Rusbrukslidelser i Norge [Rapport]. www.fhi.no: Folkehelseinstituttet 2014 [cited 2019 10 april]. Available from: https://www.fhi.no/nettpub/hin/psykisk-helse/ruslidelser/.

41.   Nolen-Hoeksema S. Gender differences in risk factors and consequences for alcohol use and problems. Clinical Psychology Review. 2004;24(8):981-1010.

42.   Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. Psychol Bull. 1992;112(1):64-105.

43.   Cloninger CR, Sigvardsson S, Bohman M. Childhood Personality Predicts Alcohol Abuse in Young Adults. Alcoholism: Clinical and Experimental Research. 1988;12(4):494-505.

44.   Skretting A, Vedøy TF, Lund KE, Bye EK. Rusmidler i Norge 2016 [Rapport]. www.fhi.no: Folkehelseinstituttet; 2016 [Available from: https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2016/rusmidler_i_norge_2016.pdf.

45.   Kringlen E, Torgersen S, Cramer V. Mental illness in a rural area: a Norwegian psychiatric epidemiological study. Soc Psychiatry Psychiatr Epidemiol. 2006;41(9):713-9.

46.   Grant BF, Stinson FS, Harford TC. Age at onset of alcohol use and DSM-IV alcohol abuse and dependence: a 12-year follow-up. J Subst Abuse. 2001;13(4):493-504.

47.   Kraus L, Tinghög ME, Lindell A, Pabst A, Piontek D, Room R. Age, Period and Cohort Effects on Time Trends in Alcohol Consumption in the Swedish Adult Population 1979–2011. Alcohol and Alcoholism. 2015;50(3):319-27.

48.   Meng Y, Holmes J, Hill-McManus D, Brennan A, Meier PS. Trend analysis and modelling of gender-specific age, period and birth cohort effects on alcohol abstention and consumption level for drinkers in Great Britain using the General Lifestyle Survey 1984-2009. Addiction. 2014;109(2):206-15.

49.   Simons-Morton BG, Farhat T, ter Bogt TF, Hublet A, Kuntsche E, Nic Gabhainn S, et al. Gender specific trends in alcohol use: cross-cultural comparisons from 1998 to 2006 in 24 countries and regions. Int J Public Health. 2009;54 Suppl 2:199-208.

50.   Folkehelseinstituttet. Alkoholbruk i den voksne befolkningen. www.fhi.no; 2018.

51.   Erol A, Karpyak VM. Sex and gender-related differences in alcohol use and its consequences: Contemporary knowledge and future research considerations. Drug and Alcohol Dependence. 2015;156:1-13.

52.   Folkehelseinstituttet. Narkotikabruk i Norge. www.fhi.no; 2018.

53.   Folkehelseinstituttet. Helsetilstanden i Norge 2018. www.fhi.no; 2018.

54.   Bye EK, Sandøy TA. Folkehelserapporten: Alkohol og andre rusmiddel
www.fhi.no/nettpub: Folkehelseinsituttet; 2018 [

55.   Moan IS, Halkjelsvik T. Alkohol og arbeidsliv- en undersøkelse blant norske
arbeidstakere. www.fhi.no; 2016.

56.   Østhus S, Mäkelä P, Norström T, Rossow I. Sosial ulikhet i alkoholbruk og
alkoholrelatert sykelighet og dødelighet. In: helse Alo, editor.
www.helsedirektoratet.no/publikasjoner: Helsedirektoratet; 2016.

57.   Katikireddi SV, Whitley E, Lewsey J, Gray L, Leyland AH. Socioeconomic status as an
effect modifier of alcohol consumption and harm: analysis of linked cohort data. The Lancet
Public Health. 2017;2(6):e267-e76.

58.   Affleck W, Carmichael V, Whitley R. Men's Mental Health: Social Determinants and
Implications for Services. Can J Psychiatry. 2018;63(9):581-9.

59.   Alonso J, Angermeyer MC, Bernert S, Bruffaerts R, Brugha TS, Bryson H, et al.
Prevalence of mental disorders in Europe: results from the European Study of the
Epidemiology of Mental Disorders (ESEMeD) project. Acta Psychiatr Scand Suppl.
2004(420):21-7.

60.   Mykletun A, Knudsen AK. Psykiske lidelser i Norge: Et folkehelseperspektiv.
www.fhi.no; 2009.

61.   Lindström M. Psychosocial work conditions, unemployment and self-reported
psychological health: a population-based study. Occupational Medicine. 2005;55(7):568-71.

62.   Norström F, Waenerlund AK, Lindholm L, Nygren R, Sahlén KG, Brydsten A. Does
unemployment contribute to poorer health-related quality of life among Swedish adults?
BMC Public Health. 2019;19(1):457.

63.   Brydsten A, Hammarström A, San Sebastian M. Health inequalities between
employed and unemployed in northern Sweden: a decomposition analysis of social
determinants for mental health. Int J Equity Health. 2018;17(1):59.

64.   Van Voorhees BW, Paunesku D, Kuwabara SA, Basu A, Gollan J, Hankin BL, et al.
Protective and Vulnerability Factors Predicting New-Onset Depressive Episode in a
Representative of U.S. Adolescents. Journal of Adolescent Health. 2008;42(6):605-16.

65.   Steinhausen H-C, Metzke CW. Risk, Compensatory, Vulnerability, and Protective
Factors Influencing Mental Health in Adolescence. Journal of Youth and Adolescence.
2001;30(3):259-80.

66.   Wille N, Bettge S, Ravens-Sieberer U. Risk and protective factors for children's and
adolescents' mental health: results of the BELLA study. Eur Child Adolesc Psychiatry. 2008;17
Suppl 1:133-47.

67.   Storvoll E, Rossow I, Moan IS, Norstrøm T-A, Scheffels J, Lauritzen GO. Skader og
problemer forbundet med bruk av alkohol, narkotika og tobakk. 2010.

68.   Bramness JG. Hva er avhengighet. Oslo: Universitetsforl.; 2018.

69.   Taylor OD. Adolescent Depression as a Contributing Factor to the Development of
Substance Use Disorders. Journal of Human Behavior in the Social Environment.
2011;21(6):696-710.

70.   Gau SS, Chong MY, Yang P, Yen CF, Liang KY, Cheng AT. Psychiatric and psychosocial
predictors of substance use disorders among adolescents: longitudinal study. Br J Psychiatry.
2007;190:42-8.

71.   Whitesell M, Bachand A, Peel J, Brown M. Familial, Social, and Individual Factors
Contributing to Risk for Adolescent Substance Use. Journal of Addiction. 2013;2013:579310.

72.   Tiikkaja S, Sandin S, Malki N, Modin B, Sparén P, Hultman CM. Social class, social mobility and risk of psychiatric disorder--a population-based longitudinal study. PLoS One. 2013;8(11):e77975.

Appendix

![REK logo - REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK]

Region:	Saksbehandler:	Telefon:		Vår dato:	Vår referanse:
REK nord	Maren Johannessen Melsbø	77620748		26.06.2019	2019/1140/REK nord
				Deres dato:	Deres referanse:
				26.06.2019	

Vår referanse må oppgis ved alle henvendelser

Jørgen G. Bramness
Institutt for klinisk medisin

2019/1140 Mental helse hos voksne barn av personer med rusmiddelproblemer

Forskningsansvarlig institusjon: UiT Norges arktiske universitet
Prosjektleder: Jørgen G. Bramness

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden er behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK nord) ved sekretariatsleder, etter fullmakt gitt av komiteen med hjemmel i forskningsetikkforskriften § 7, første ledd, tredje punktum. Søknaden er vurdert med hjemmel i helseforskningsloven § 10.

Prosjektleders prosjektomtale
Bruken av rusmidler øker på verdensbasis, og det er velkjent at det sammen med rusbruk kan oppstå ulike psykiske utfordringer. Psykiske utfordringer og bruk av rus påvirker mange ulike deler av livet; sosialt, økonomisk, relasjon til familie og venner, arbeid osv. Konsekvenser ved å vokse opp sammen med foreldre med problematisk rusbruk er velkjent, men få studier har sett på om det finnes noen forskjell i utfall i forhold til om det er mor eller far som har et rusproblem. Denne tverrsnittstudien skal derfor se nærmere på hvilke karakteristika i gruppen av voksne barn av rusmiddelbrukere, hvor stort symptomtrykk av angst og depresjon de selv rapporterer, om det er avgjørende for utfallet om det er mor eller far med problematisk rusbruk og hvordan deres eget rusbruk er sammenlignet med den generelle befolkning.

Organisering og ledelse, herunder prosjekttype
Prosjektet er en del av en studentoppgave i profesjonsstudiet medisin.

Prosjektopplysninger
Av søknaden følger at: *«Denne studien skal se nærmere på voksne som er/har hatt foreldre med problematisk bruk av rus, og som har deltatt i Tromsøundersøkelsen 7. Studien skal se nærmere på karakteristika ved denne gruppen, om de er forskjellig fra den generelle befolkningen vedrørende eget rusbruk og selvrapporterte angst- og depresjonssymptomer.»*

Og videre: *«Studien vil kunne bidra til mer kunnskap rundt voksne barn av rusmiddelbrukere og hvordan de påvirkes av foreldrenes rusbruk. Videre vil studien også kunne gi bedre innsikt i konsekvensen av om det er mor, far eller begge som har et problematisk rusbruk, og nærmere karakteristikk rundt denne gruppen av voksne.»*

Det skal samles inn data fra Tromsøundersøkelsen 7 (T7). I epost datert 26.06.19 har prosjekteder presisert at populasjon som skal inkluderes er totalt 21.083.

Det skal samles inn data om: Selv-rapportert bruk av alkohol, andre rusmidler og medikamenter, rapporterte symptomer på angst og depresjon, alder, kjønn, utdanning, inntekt, om de har foreldre (mor, far eller begge)

GRADE

Referanse: Christoffersen MN, Soothill K. The long-term consequences of parental alcohol abuse: a cohort study of children in Denmark. Journal of Substance Abuse Treatment. 2003;25(2):107-16	Studiedesign: Kohortstudie	
	GRADE Middels	**Dokumentasjonsnivå** IIb

Formål	Materiale og metode	Resultater	Diskusjon/kommentarer/sjekkliste
To investigate if parental alcohol abuse have an impact on their children in the age 13 through 27 years.	**Populasjon:** Children born in 1966 in Denmark, N= 84 765	- 4.5 % of the children had parents with alcohol abuse	**Sjekkliste:**
Konklusjon	**Kohorter:**	- Higher odds of life experiences amongst children with parental alcohol abuse. OR 2.6 for prediction of family separation. Parental violence occured 4.5 times more often in alcohol-abusing parents.	• Formålet klart formulert? **JA**
Parental alcohol abuse may influence several long-term consequenses like increased mortality, self-destructive behaviors like attempted suicide or drug addiction. In addition there where found a higher frequency of hospitalization due to violence, increased risk of teenage pregnancy and unemployment amongst these children.	- Children in the age 13-27 years, born in 1966, with parental alcohol abuse. - Children in the age 13-27 years, born in 1966, without any evidence of parental alcohol abuse	- Children with parental alcohol abuse had a significantly higher likelihood for premature death, drug addiction, being hospitalized for mental illness and suicide attempts.	• Er gruppene rekruttert fra samme populasjon/befolkningsgruppe (seleksjonsbias)? **NEI** • Var de eksponerte individene representative for en definert befolkningsgruppe/populasjon? **JA** • Ble eksposisjon og utfall målt likt og pålitelig (validert) i de to gruppene (Classification bias)? **JA** • Er den som vurderte resultatene (endepunkt- ene) blindet for gruppetilhørighet? **NEI** • Var studien prospektiv? **JA** • Ble mange nok personer i kohorten fulgt opp? **JA** • Er det utført frafallsanalyser? **NEI** • Var oppfølgingstiden lang nok til å påvise positive og/eller negative utfall? **JA** • Er det tatt hensyn til viktige konfunderende faktorer i design/ gjennomføring/analyser? **JA** • Hva betyr resultatene for endring av praksis? **Uklart.**
	Hovedutfall: - <u>Life experiences:</u> family separation, domestic violence, parental imprisonment, physical violence between parents, abuse or neglect against the child, placed in residental/foster care, teenage motherhood - <u>Damage to self:</u> death before the age of 27, self-destructive behaviour like drug abuse and suicide-attempts, hospitalization because of psycological illness.	- Having a mother with alcohol abuse was associated with more severe consequenses in relation to criminal activity, violence and sexual offenses. - Alcohol abuse amongst parents have an negative effect on employment.	
Land Denmark	- <u>Damage to others:</u> criminal activity, violence, sexual offenses	**Bifunn** - Mother with alcohol abuse seemd to give higher occurence of all disadvantages (life experiences, damage to self, damage to others and life resources) - Fathers alcohol abuse significantly contribute to premature death	**Hva diskuterer forfatterne som:**
År data innsamling	- <u>Life resources:</u> unemployment, not graduating with examination from high-school, no vocational training		• **Styrke:** Hospital admissions was used to determine alcohol abuse amongst parents which may represent the more severe cases of abuse and therefore the more severely affected children.
Children born in 1966 was followed from 1979 -1993. The exact year for datasampling is not stated in the article.	**Statistiske metoder** Discrete-time Cox-regression		• **Svakhet:** Restricted number of cases because only those with alcohol abuse that was admitted to hospital and had a alcohol-related diagnosis was included, which gives an underestimated picture of a comprehensive problem. In addition it´s discussed how the consequenses can variate amongst those with parental alcohol abuse known to the authorities and those who are not known

Referanse: Gau SS, Chong MY, Yang P, Yen CF, Liang KY, Cheng AT. Psychiatric and psychosocial predictors of substance use disorders among adolescents: longitudinal study. Br J Psychiatry. 2007;190:428.	Studiedesign: Kohortstudie	
	GRADE Middels	**Dokumentasjonsnivå** IIa

Formål	Materiale og metode	Resultater	Diskusjon/kommentarer/sjekkliste
Identify individual, socioenvironmental and phsyciatric predictors of substance use disorder amongst adoults in a non-Western society.	**Populasjon:** Schoolchildren in grade 7 (12 years) from two junior high schools in South-Taiwan (N=1070) **Kohorter:** - Screened positiv for psychiatric disorders (N=382) - 1/10 screened negative for psychiatric disorders (N=64) **Hovedutfall:** - <u>Survival time:</u> the age of onset of substance use disorder - <u>Sociodemographics:</u> gender, parent´s education, household, family structure, birth order - <u>Psychosocial predictors:</u> house-moving at 11 years, parent´s and student´s expectation of highest educational level, income pr month, smoking amongst parents/siblings, substance use amongst parents/siblings, school performance, peer influences, attitude towards substance use **Statistiske metoder** 26 out of 44 classes at the two junior high schools were randomly selected. During the studys first year 446(those screened positiv and random selection of negativ) of the participants recieved a standardised psychoatric assessment by staff child psychiatrics (blinded). Remaining after dropout of participants n=428. These 428 participants was interviewd by using a standardised psychiatric interview the first year of the study and the following two consecutive years. Chinese K-SADS-E (chonese version of schedule for affective disorders and	- Mean age of onset amongst those with ADHD was 7.2 years (SD 1.1), 9.5 years (SD 1.5) for anxiety disorder, 11.2 years (SD 1.5) for oppositional defiant dosrder, 11.7 years (SD1.1) for conduct disorders, 12.8 years (SD 1.5) for depressive disorders and 13.0 years (SD 0.8) for subtance use disorder. - 16.3 % of the boys and 3.3 % of the girls were newly diagnosed with substance use disorder. - Those with a substance use disorder were more likely to be male, have parents with lower educational level. - The risk for substance use disorder showed to increase amongst participants/parents with lower expectations to highest educational achivement, amongst those were siblings had regular use of tobacco or other substances, lower grades at primary school, amongst those who preffered to hang out with friends rather than family and with substance abusing friends and amongst those with a liberal attitude towards trying substances. - Disorders like ADHD, conduct disorder and oppositional defiant disorder showed to increase the risk for SUD - The most predivtive factors for developing SUD was male gender, ADHD, conduct disorder and siblings using tobacco.	**Sjekkliste:** - Formålet klart formulert? **JA** - Er gruppene rekruttert fra samme populasjon/befolkningsgruppe (seleksjonsbias)? **JA** - Var de eksponerte individene representative for en definert befolkningsgruppe/populasjon? **NEI** - Ble eksposisjon og utfall målt likt og pålitelig (validert) i de to gruppene (Classification bias)? **JA** - Er den som vurderte resultatene (endepunktene) blindet for gruppetilhørighet? **JA** - Var studien prospektiv? **JA** - Ble mange nok personer i kohorten fulgt opp? **JA** - Er det utført frafallsanalyser? **JA** - Var oppfølgingstiden lang nok til å påvise positive og/eller negative utfall? **JA** - Er det tatt hensyn til viktige konfunderende faktorer i design/ gjennomføring/analyser? **JA** - Hva betyr resultatene for endring av praksis? **Indicates that early prevention for psychosocial risk factors and psychiatric disorders may be prevantive for substance abuse.** **Hva diskuterer forfatterne som:** - **Styrke:** the longintudinal design, using standardised K-SADS-E for pshyciatric assessment, using psyciatrich diagnosis with consesus from independent assessment, the high respons rate, using structured interviews. - **Svakhet:** The external validity for the population which has been recruted from only two schools, the psychiatric disorders was based on interviews of the participants and teachers, but not the parents. The study did not include biological measures, and by using DSM-IV criteria for SUD its likely that some respondents have been excluded.

Konklusjon

Early intervention for disruptive behaviour disorders and specific psychosocial risk factors might prevent substance use disorders in early adolescence.

Land

Taiwan

År data innsamling

1995

Referanse: Raninen J, Elgán TH, Sundin E, Ramstedt M. Prevalence of children whose parents have a substance use disorder: Findings from a Swedish general population survey. Scandinavian Journal of Public Health. 2015;44(1):14-7			Studiedesign: Cross-sectional survey	
			GRADE Middels	**Dokumentasjonsnivå** IIa

Formål	Materiale og metode	Resultater	Diskusjon/kommentarer/sjekkliste
Estimate the prevalence of children in Sweden that live together with one or more parent with a substance use disorder, either alcohol use disorder (AUD) or drug use disorder (DUD)	**Populasjon:** Adults from 17-84 years old who reported to have children under the age of 18 and having at least part-time custody for these children (N=3778) **Hovedutfall:** - Adult with an AUD or DUD measured by using DSM-IV criterias who had at least part time custody for at least one child **Statistiske metoder** Seven questions from Mini International Neuropsychiatric Interview was used for measuring dependece, and four questions were used to measure abuse. Cut-off for dependece was three, and one for abuse. Cronbachs alpha for alcohol-dependence was 0.73, for illicit drug dependence it was 0.83.	- 4.6 % of the children had at least one parent with SUD - 3.7 % had AUD, which were most common and accounted for over 80 % of the SUD in these parents - DUD were found in 1/6 cases	**Sjekkliste:** • Er formålet klart formulert? **JA** • Er tverrsnittstudie egnet for formålet? **JA** • Er kasus rekruttert på en «god» måte? **JA** • Var gruppene hentet fra sammenlignbare befolkningsgrupper? **JA** • Har forfatterne tatt hensyn til viktige konfunderende faktorer i design/analyse? **Uklart** • Var den som målte eksponering/samlet inn data blinda mht hvem som var kasus/kontroll? **NEI** • Tror du på resultatene? **JA** • Kan resultatene overføres til praksis? **JA** • Støtter litteraturen resultatene? **JA** **Hva diskuterer forfatterne som:** • **Styrke:** the great sample size with a relatively good response rate, using a well-established measurement for SUD, good internal consistency for measure-instrument regarding alcohol and illicit drugs • **Svakhet:** result based on self-reported information which can lead to under-reporting, the population does not include those parents recieving treatment for SUD at institutions

Konklusjon

Based on DSM-IV criteria for SUD, the estimated number of childeren that have one or more parent with SUD was lower (4.6 %) compared to previous studies. Still, a large number of children are in this situation and calls for public health strategies and intervention efforts aimed at reducing the poential negative effects.

Land

Sweden

År data innsamling

2013

Studiedesign: Cohort

GRADE	Dokumentasjonsnivå
Middels	IIa

Formål	Materiale og metode	Resultater	Diskusjon/kommentarer/sjekkliste

Formål

Examine wheter adult social class and social mobility between parental and own adult social class is related to subsequent psychiatric disorder

Konklusjon

The risk of psychiatric disorder had an iversely related relationship to social class. Independetly of their parents social class, the risk for psychiatric disorder increased with increased downward social mobility and decreased with increased upward mobility

Land

Sweden

År data innsamling

1960, 1980 and 1990

Materiale og metode

Populasjon:
Swedish residents born in 1949-1959 which could be linked to one of the occupational classes (manual, non-manual, selv-employed) and

Kohorter:
Adult social class:
- high non-manual
- low non-manual
- high manual
- low manual
- self-employed

Hovedutfall:
- Parental social class
- Psychiatric disorder: schizophrenia, alcoholism, drug dependency, affective psychosis, neurosis and personality disorder

Statistiske metoder
Poisson regression models adjusted for sex and age at diagnosis, estimated the rate of psychiatric disorder, by adult social class and time intervals of age and RR.

Resultater

- Men had a higher amount of psychiatric disorders compared to women
- Participants with parental psychiatric disorders and/or parents with lower social status also had a higher rate of psychiatric disorders
- RR for psychiatric disorder varied by adult social class, with higher risk for the Manual and Selv-emplyed classes than for the non-manual classes.
- All upward trajectories showed a significantly lower risk for psychiatric disorder, and all downward trajectories showed a significantly higher risk.
- The larger the movement, the greater was the change in risk.

Diskusjon/kommentarer/sjekkliste

Sjekkliste:
- Formålet klart formulert? **JA**
- Er gruppene rekruttert fra samme populasjon/befolkningsgruppe? **NEI**
- Var gruppene sammenliknbare i forhold til viktige bakgrunnsfaktorer? **NEI**
- Var de eksponerte individene representative for en definert befolkningsgruppe/populasjon? **JA**
- Ble eksposisjon og utfall målt likt og pålitelig (validert) i de to gruppene? **JA**
- Er den som vurderte resultatene (endepunkt- ene) blindet for gruppetilhørighet? **NEI**
- Var studien prospektiv?
- Ble mange nok personer i kohorten fulgt opp? (Attrition bias/follow-up-bias) **JA**
- Er det utført frafallsanalyser? (Eval. attrition bias) **NEI**
- Var oppfølgingstiden lang nok til å påvise positive og/eller negative utfall? **JA**
- Er det tatt hensyn til viktige konfunderende faktorer i design/ gjennomføring/analyser? **Uklart**
- Kan resultatene overføres til den generelle befolkningen? **JA**
- Annen litteratur som styrker/svekker resultatene? **JA**

Hva diskuterer forfatterne som:
- **Styrke:** detailed measurements of social class, follow-up over ten years, men and women was analyzed separately,
- **Svakhet:** the study lacks information about outpatient care which can lead to an underestimation of the association between social class and psychiatric disorders

Studiedesign: Cohort

GRADE	Dokumentasjonsnivå
Middels	IIa

Formål	Materiale og metode	Resultater	Diskusjon/kommentarer/sjekkliste
Establishe the role of parental substance abuse among other adverse childhood circumstances in children aged 7-17 years.	**Populasjon:** All children born in 1991 in Finland and their biological parents (N=63639).	- 7.7 % of children between 7-12 years had a mental disorder, and 10.5 % in the group 13-17 years.	**Sjekkliste:**

Populasjon:
All children born in 1991 in Finland and their biological parents (N=63639).

Kohorter:
- Children at the age 7-17 years with parental SA
- Children at the age 7-17 years without parental SA

Hovedutfall:
- Children´s mental disorders
- Children´s harmful substance use
- Parental substance abuse
- Parental mental disorders
- Long-term social assistance
- Living arrangements of child
- Parental death
- Paretanl education and age

Statistiske metoder
Pearsons chi-square test where used for descriptive analyses for prevalence of the measurements. Two analysis was done by using bivariate and multivariate logistic regression; the effects of parental SA and AXEs before 7 years on mental disorders and the effects of parental SA and ACE ecperienced before the age of 13.

Formål
Establishe the role of parental substance abuse among other adverse childhood circumstances in children aged 7-17 years.

Konklusjon
Parental substance abuse (SA) seems to have an independent effect on mental disorders and harmful substanse use amongst the adults growing up with these parents. Adverse childhood experiences(ACE) tend to cluster in families with parental SA.

Land
Finland

År data innsamling
1991-2009

Resultater
- 7.7 % of children between 7-12 years had a mental disorder, and 10.5 % in the group 13-17 years.
- Parental SA was associated with other adverse childhood experiences, these parents had a significantly higher rate of mental disorders, more often recieved long-term social assistance, had a higher mortality rate and a decreased educational-duration.
- Parental mental disorders, family recieving social assistance and non-intact family was significant predictors for the childrens mental disorders and harmful substance abuse.

Diskusjon/kommentarer/sjekkliste

Sjekkliste:
- Formålet klart formulert? **JA**
- Er gruppene rekruttert fra samme populasjon/befolkningsgruppe? **NEI**
- Var gruppene sammenliknbare i forhold til viktige bakgrunnsfaktorer? **JA**
- Var de eksponerte individene representative for en definert befolkningsgruppe/populasjon? **JA**
- Ble eksposisjon og utfall målt likt og pålitelig (validert) i de to gruppene? **JA**
- Er den som vurderte resultatene (endepunkt- ene) blindet for gruppetilhørighet? **NEI**
- Var studien prospektiv? **JA**
- Ble mange nok personer i kohorten fulgt opp? (Attrition bias/follow-up-bias) **JA**
- Er det utført frafallsanalyser? (Eval. attrition bias) **NEI**
- Var oppfølgingstiden lang nok til å påvise positive og/eller negative utfall? **JA**
- Er det tatt hensyn til viktige konfunderende faktorer i design/ gjennomføring/analyser? **NEI**
- Kan resultatene overføres til den generelle befolkningen? **JA**
- Annen litteratur som styrker/svekker resultatene? **JA**

Hva diskuterer forfatterne som:
- **Styrke:** longitudinal register-based data for a complete birth cohort was used in this study, the diagnosis used as a criteria in this study are recognized by medical doctors and other professionals
- **Svakhet:** data are limited to those who have taken advantage of health services which can give and underestimated prevalence, not able to investigate familial dysfunctions such as maltreatment.