

# Mothers who abuse alcohol and drugs: Health and social harms among substance-abusing mothers of small children in three child cohorts

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## ABSTRACT

**AIMS** – The study looks at the prevalence and register-based indicators of substance abuse-related harms among mothers of small children. We examined the living conditions, various health and social harms and the differences between the users of different kinds of substances (alcohol only vs. drugs only vs. alcohol and other drugs). **DATA & METHODS** – Population-level register data was collected of all biological mothers of three Finnish birth cohorts (1991, 1997, 2002) describing the women's social problems, health and use of services during the period when the child was under seven years old. **RESULTS** – The substance-abusing mothers of small children had a higher rate of mortality and psychological disorders and increased risk of using hospital services than the comparison group. Their children had been taken into custody dramatically more often than the children of the comparison group. Also, mothers with substance abuse problems had lower education and income level, and their purchases of prescribed psychopharmacological medications were manifold compared to other mothers. Mixed use of both alcohol and illegal drugs coincided with the highest prevalence of health and social problems. **CONCLUSIONS** – Substance-abusing mothers of small children are in a serious risk of health and social problems ranging from poverty to poor mental health and high mortality. The study shows also that the social and health care professionals have a potentially important role in giving support to the mothers and their children, as the substance-abusing mothers have had several contacts with them. Prevention of harms to children of substance-abusing mothers should perhaps focus more on the possibilities offered by these contacts in different health and social services.

**KEYWORDS** – alcohol and drug abuse, mothers, children, harms to others, register-based studies

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## Introduction

Several studies have shown that children may experience considerable harm as a result of their parents' drinking and/or use of other drugs (Dube et al., 2001; Orford et al., 2005; Brisby, 1999). The risks faced by

the children of substance-abusing parents range from a risk of physical handicap to increased morbidity, learning difficulties, stress, limited opportunities, poverty and social shame. Research has also shown

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that there is a connection between adverse experiences in childhood and an increased risk of multiple problems in adolescence and in adulthood (Pitkänen et al., 2008; Lieb et al., 2002; Jacob, 2000; Harter & Taylor, 2000). The mother's alcohol use can affect the child already before birth (Autti-Rämö, 2002; Autti-Rämö et al., 2006; BMA Board of Science, 2007). Children who have been exposed to other drugs during pregnancy have been found to have more problems in speech, concentration, development and social skills (Koponen, 2006; Bandstra et al., 2010).

Concern over the health of the unborn children of substance-abusing women has recently led to increased action and research on how to prevent cross-generational problems (World Health Organization, 2010). Children of all ages have been the focus of discussion and research on alcohol-related harms to others than the drinkers themselves (Laslett et al., 2010; Livingstone et al., 2010; Klingemann & Gmel, 2001; Room et al., 2010). Yet there is very little non-clinical research looking at the numbers and characteristics of substance-abusing mothers. Understanding their life situation is important if we are to minimise and prevent harms to children and to develop services for the family.

A recent study has shown that the biological mother's substance abuse problems have a statistical connection with various well-being and health problems in their children under 7 years. Young children of substance-abusing mothers had a higher risk of accident or injury and of physical illness than their peers with non-substance-abusing mothers. Out-of-home placements during the first seven years of life were significantly more common among children

of substance-abusing mothers (Raitasalo & Holmila, 2012). In Finland, the number and proportion of children placed in out-of-home care have increased steadily since the 1990s. The children and young people placed in out-of-home care suffer from a variety of deficits in well-being in their early adulthood (Kestilä et al., 2012).

It is likely that the increased use of alcohol and other drugs is one of the reasons behind these developments. Use of alcohol has grown in Finland during the last decades, especially so among women. The annual volume of alcohol drunk by Finnish women increased sixfold between 1968 and 2008 (Mäkelä et al., 2010). According to the Finnish Drinking Habits 2008 survey, 14% of all Finnish women used alcohol in a way that exceeded the threshold of risky drinking. Women under 30 years of age reported most often harms related to their own drinking and they also had most often high AUDIT scores indicating risky drinking (16%), compared to 6% among women aged 30 to 49 years (Huh-tanen et al., 2011). The number of women who have used illegal drugs at least occasionally has also increased during the 2000s. In 2010, 13% of women aged 15–24 and 6% of women aged 25–34 had used some illegal drug at least once during the last year (Metso & et al., 2012).

Having small children generally seems to reduce women's use of alcohol. Mothers of small children are more often abstainers, use alcohol less often and get drunk more seldom than those who do not have small children, regardless of the mother's age (Raitasalo, 2010). The reasons are most likely related to social norms that emphasise the role of a mother and condemn excessive drinking and any use of other

drugs at this stage of a woman's life. Alcohol is widely used in western societies and is socially generally well accepted, whilst the use of other drugs is less acceptable. Persons using illegal drugs, or combining alcohol use with illegal drugs, are thus likely to have more complex problems and to be socially marginalised.

This study aims to illuminate the prevalence of substance abuse and related harms among mothers of children aged younger than 7 years. The register-based data allows us to describe in some detail the living conditions, various health and social harms and the differences between the users of different kinds of substances in the three cohorts studied. The paper is motivated by the idea that better awareness of the mothers' concrete living situations and harms could be useful for developing tailored help and also for learning what should be done to prevent harm.

The study aims 1) to measure the prevalence of serious substance abuse problems among mothers of small children, and 2) to describe the health-related harms, use of prescribed psychoactive medicines and the use of services among the mothers of small children according to the main substance used (alcohol only vs. drugs only vs. mixed use of alcohol as well as other drugs).

## The data

The study is based on population-level register data. This consists of all mothers who have given birth in Finland in 1991, 1997 and 2002, and their biological children. The data collection began with the Medical Birth Register (including all live births), from which the personal identity numbers were selected of all children born

during those three years, and their biological mothers. The personal identity number was used for linkages to data from a further seven registers: 2) the Inpatient Health Care Register, 3) the Care Register of Social Welfare, 4) the Register of Purchases of Prescription Medicines, 5) the Child Welfare Register, 6) the Register of Causes of Death, 7) the Register of Completed Education and Degrees and 8) the Register of Congenital Malformations.

Finland introduced a personal identity number system in 1964. Administrative registers have included this identification code since then. There are strict data protection laws regulating the collection of sensitive health and social information. Health data that includes identifiers can be gathered by obtaining informed consent from the individuals in question. An important exception to this general principle is the collection and use of such data for scientific purposes, for example in epidemiological studies, when the data is large. Information that is needed to identify an individual person is removed from the data set. The data in these registers has been shown to have good coverage and validity, although there may be variance in the quality of some variables (Gissler & Haukka, 2004).

The study plan was accepted by the ethical review board of the National Institute for Health and Welfare (THL). The persons responsible for maintaining the registers in the National Institute for Health and Welfare, the Social Insurance Institution of Finland, and Statistics Finland carried out the data collection and combined the data from the different registers using the personal identity numbers. The data given to the researchers were anonymised.

We created a variable to define substance abuse in the study population. Mothers who had any ICD-10 diagnosis (either primary or secondary) or record of inpatient treatment related to substance abuse problems (the Inpatient Health Care Register / the Care Register of Social Welfare), or who had register entries of purchases of prescribed medication for treatment of alcohol or drug addiction (ATC: N07BB, N07BC, the Prescription Register / Special Refund Entitlement Register) or whose child had a diagnosis of prenatal alcohol or drug exposure (the Register of Congenital Malformations), were classified as having substance abuse problems. The entries were specified according to whether the mother had register entries only related to alcohol abuse, only drug abuse or to both alcohol and drug abuse. The data covered 11 years (4 years before delivery and up to the child's 7<sup>th</sup> birthday). The four years before the child's birth were included, as substance abuse problems may have emerged before the birth of the child (Raitasalo & Holmila, 2013).

The mother's social status was examined through the latest educational status (the proportion of those who had any further education after secondary school) and whether she had named a husband or a partner at the time of the delivery. Long-standing poverty was defined by the person having received income support for more than three months during at least three years during the child's life. The variable "child in custody" means that the child had been taken into custody by child protection workers and placed in out-of-home care at least once before his or her 7<sup>th</sup> birthday. Psychiatric disorders were identified using several registers. Mothers

who had any primary or secondary ICD-10 diagnosis (or corresponding ICD-9 codes before 1996) or record of inpatient treatment related to schizophrenia, schizotypal and delusional disorders (F20–F29), mood (affective) disorders (F30–F39), neurotic, stress-related and somatoform disorders (F40–F48) and disorders of adult personality and behaviour (F60–F69) in the Inpatient Health Care Register or the Care Register of Social Welfare or who had according to the Special Refund Entitlement Register the right for higher reimbursement for individually specified medication prescribed for certain severe psychiatric disorders were classified as having psychiatric disorders. (The higher reimbursement rate is based on a physician's certificate and is an indicator of chronic disease.) All register entries starting from the child's birth until his/her seventh birthday were included.

The data gathered from the Register of Purchases of Prescription Medicines included information on purchases of psychoactive prescription drugs affecting the central nervous system. The medicines studied were opioids (ATC: N02A), neurosis medicines and tranquillisers, including benzodiazepines (ATC: N05B) and sleeping medicines (ATC: N05C). These groups of prescription drugs are known to be among the most commonly abused psychoactive drug types (Joranson et al., 2000; SAMHSA, 2008; SAMHSA, 2010). Previous research has also shown that illicit use of pharmaceutical opioids and other prescription drugs is strongly associated with other drug use behaviours (Inciardi et al., 2004; Sung et al., 2005; Boyd et al., 2006; McCabe et al., 2008).

The data were analysed using SAS 9.3

**Table 1.** Mothers with one or more register entries indicating substance abuse during 4 years before the birth of the child up to the child's 7th birthday, %

Mother's substance use	1991 cohort(N=64776)	1997 cohort (N=58327)	2002 cohort (N=54686)
Substance abuse (SM)	1.0 (644)	1.6 (928)	1.9 (1062)
Alcohol (AM)	0.5 (333)	1.0 (567)	1.2 (641)
Drugs (DM)	0.3 (187)	0.3 (166)	0.4 (201)
Alcohol and Drugs (ADM)	0.1 (82)	0.2 (124)	0.3 (176)
No abuse (OM)	99.0 (64129)	98.5 (57401)	98.1 (53633)

Data of the type of substance abuse of 157 mothers were missing.

software. The groups of substance-abusing and non-substance abusing mothers were compared by chi-square tests. When analysing risks of social and health problems in the different groups of substance-abusing mothers, logistic regression analysis was used.

## Results

### *Prevalence of substance-abuse problems among mothers of small children*

Table 1 shows that the vast majority of women who gave birth in 1991, 1997 or 2002 had no register entries indicative of substance abuse. The substance-abusing mothers (SM) in each child cohort are divided in three groups 1) those who have register entries on alcohol abuse only (AM); 2) those who have register entries on drug abuse only (DM); and 3) those who have register entries on both alcohol and drug abuse (ADM).

In the first cohort (born in 1991), 1% of the children had according to the register entries a substance-abusing mother, whilst the corresponding numbers for the later cohorts (born in 1997 and 2002) were 1.6% and 1.9%, respectively. These figures are comparable with those presented in other studies: according to the Finnish Health 2000 Study, approximately 2% of all wom-

en were alcohol-dependent (Halme et al., 2008). Women of reproductive age are less likely to show higher than average rates of substance abuse in the register data, since substance use problems often take years to develop. Finnish women above the age of 50 years have the highest rate of alcohol-related health harms (Holmila et al., 2009).

Alcohol abuse was the most common diagnosis in these data. This was to be expected, as alcohol is the most commonly used drug in Finland.

### *Social status and life events among the mothers*

Table 2 shows the social status and register-based information of health and social problems among all the women who gave birth during the studied years 1991, 1997 and 2002. The type of substance abuse is not specified. All differences between the comparison group of non-abusing mothers and the substance-abusing mothers were statistically significant in all cohorts.

The substance-abusing mothers had higher overall mortality than the mothers in the comparison group. Women with substance abuse problems had less often a husband or a partner than did other women at the time of birth of the child. Substance-abusing mothers were also less

**Table 2.** Social status and life events among the mothers, percentages and chi-square test results

	Register entries on the mother's substance abuse		
Register entries describing social status and life events among mothers during the period when the child is younger than 7 years old			
	Substance abuse, % (n)	No substance abuse, % (n)	p(chisq2)
Death (all causes)			
1991	6 (36)	0.2 (126)	<.0001
1997	3 (32)	0.2 (93)	<.0001
2002	3 (27)	0.2 (92)	<.0001
Married or with a partner at the time of giving birth			
1991	80 (524)	93 (60448)	<.0001
1997	75 (702)	89 (52069)	<.0001
2002	66 (718)	86 (46605)	<.0001
Has achieved more than basic education			
1991	55 (358)	88 (56916)	<.0001
1997	61 (573)	89 (51986)	<.0001
2002	55 (591)	88 (48122)	<.0001
Received long-standing income support			
1991	76 (497)	14 (9396)	<.0001
1997	70 (658)	12 (7102)	<.0001
2002	60 (651)	9 (4811)	<.0001
Child placed in out-of-home care at least once			
1991	35 (229)	1.0 (672)	<.0001
1997	34 (323)	1.1 (654)	<.0001
2002	34 (368)	1.3 (684)	<.0001
Register entry on psychiatric disorders (ICD-10: F2, F3, F4, F6) at least once			
1991	38 (245)	2 (1242)	<.0001
1997	36 (338)	2 (1089)	<.0001
2002	35 (376)	2 (1050)	<.0001
Purchase of opioids (N02A) at least once			
1991	7 (47)	2 (1367)	<.0001
1997	17 (155)	5 (2635)	<.0001
2002	23 (253)	9 (4799)	<.0001
Purchase of neurosis medicine and tranquillisers, (N05B) at least once			
1991	48 (312)	8 (5189)	<.0001
1997	36 (340)	5 (3121)	<.0001
2002	42 (450)	5 (2978)	<.0001
Purchase of medication sleeping medicine (N05C) at least once			
1991	37 (239)	3 (2234)	<.0001
1997	27 (258)	3 (1726)	<.0001
2002	36 (389)	7 (3709)	<.0001

educated than mothers in the comparison group. Poverty was common among the substance-abusing mothers. Over half of the substance-abusing mothers in all cohorts had received long-standing income support during the child's first seven years of life. The corresponding figure for the comparison population was about 10%.

The substance-abusing mothers had often also had their child taken into custody at least once before the child's seventh birthday. In comparison to the whole population, the difference is dramatic. Only about 1% of the children of the non-abusing group have been placed in care outside home during their early years, while the corresponding share of substance-abusing mothers was over one third in all three cohorts.

The differences in psychiatric morbidity between substance-abusing and other mothers were also considerable. Comorbidity of substance abuse and psychiatric disorders was common: in all cohorts, about one third of substance-abusing mothers had psychiatric problems according to the register data. The corresponding figure in the comparison group was 2%. Purchases of psychoactive prescription drugs among the substance abusers were manifold in comparison to the non-abusing group. This was true for all three groups of studied prescription drugs.

#### *Comparison of alcohol- and drug-abusing mothers*

In order to look more closely at the differences between the types of substance abuse, we calculated the odds ratios of various risks with the alcohol only abusing mothers (AM) as the comparison group. The analysis was performed for all the life

event variables described in Table 2 above, contrasting the illegal drug users (DM) and alcohol and illegal drug users (ADM) to the alcohol abusers (see Table 3). The age and educational status of the mother were standardised in the analysis.

The table provides an overall picture where the ADM group is clearly the least well-off group measured by almost all outcome variables. In the 1991 cohort, their risk for poverty measured by receipt of long-standing income support is over twofold (OR=2.29), in the 1997 over fourfold (OR=4.14) and in 2002 almost sixfold (OR=5.92) compared to AM mothers. The risk that the child is placed in out-of-home care is about threefold in this group in comparison to the AM group in the 1997 and the 2002 cohorts. The ADM mothers' risk of psychiatric disorders is also higher in comparison to the AM mothers in all cohorts (OR=2.73 in 1991, OR=3.23 in 1997 and OR=2.07 in 2002), and their risk of having purchased psychoactive prescription drugs and psychoactive prescription drugs more often than AM mothers varies between 1.58 and 4.49, respectively, depending on cohort and type of medicine. The differences of the odds ratios for most variables between the alcohol only (AM) and drugs only groups (DM) are not statistically significant, when age and educational status are controlled for. The odds for death seem somewhat higher for the drug-abusing groups than for the alcohol abuser group, but these differences are not statistically significant, either.

## **Conclusions and discussion**

This study looks at the small minority of substance-abusing mothers, who have had contact with the treatment system and

**Table 3.** Comparison of mothers using alcohol and other drugs, odds ratios with 95% confidence levels

	1991		1997		2002	
	OR (95% CI)	p-value	OR (95%CI)	p-value	OR (95% CI)	p-value
Death (all causes)						
AM	1.00		1.00		1.00	
DM	0.64 (0.25; 1.66)	ns	2.10 (0.90; 4.90)	ns	2.26 (0.89; 5.75)	ns
ADM	2.62 (1.14; 5.99)	.0230	1.20 (0.39; 3.69)	ns	1.80 (0.64; 5.08)	ns
Long-standing income support						
AM	1.00		1.00		1.00	
DM	0.37 (0.24; 0.57)	<.0001	0.78 (0.52; 1.17)	ns	1.54 (1.06; 2.23)	.0241
ADM	2.29 (0.99; 5.33)	ns	4.14 (2.14; 8.03)	<.0001	5.92 (3.41; 10.28)	<.0001
Child placed in out-of-home care at least once before the child's 7th birthday						
AM	1.00		1.00		1.00	
DM	0.48 (0.32; 0.74)	.0009	0.71 (0.47; 1.06)	ns	1.55 (1.09; 2.21)	.0142
ADM	0.90 (0.54; 1.51)	ns	2.97 (2.17; 4.87)	<.0001	3.14 (2.17; 4.53)	<.0001
Register entry on psychiatric disorders at least once before the child's 7th birthday						
AM	1.00		1.00		1.00	
DM	1.27 (0.87; 1.86)	ns	0.67 (0.46; 0.99)	.0450	0.75 (0.53; 1.07)	ns
ADM	2.73 (1.66; 4.49)	<.0001	3.23 (2.13; 4.89)	<.0001	2.07 (1.46; 2.95)	<.0001
Purchase of opioids (N02A)						
AM	1.00		1.00		1.00	
DM	3.17 (1.54; 6.56)	.0018	2.18 (1.38; 3.45)	.0008	1.45 (0.99; 2.11)	ns
ADM	4.30 (1.88; 9.86)	.0006	2.77 (1.71; 4.49)	<.0001	1.58 (1.07; 2.34)	.0224
Purchase of neurosis medicine and tranquilisers (N05B)						
AM	1.00		1.00		1.00	
DM	1.55 (1.07; 2.25)	.0195	1.05 (0.72; 1.54)	ns	1.20 (0.86; 1.67)	ns
ADM	4.49 (2.60; 7.76)	<.0001	4.39 (2.86; 6.72)	<.0001	3.28 (2.27; 4.72)	<.0001
Purchase of sleeping medicine (N05C)						
AM	1.00		1.00		1.00	
DM	1.47 (1.01; 2.16)	.0468	0.98 (0.63; 1.52)	ns	1.47 (1.04; 2.07)	.0278
ADM	2.69 (1.57; 4.24)	.0001	4.33 (2.81; 6.65)	<.0001	2.54 (1.77; 3.64)	<.0001

thus have entries in the health and welfare registers. As the proportions of substance-abusing mothers in each birth cohort are low, it is necessary to study the whole birth cohort. Access to national register databases makes this possible, which is a special strength of register-based studies. Studies based on register data offer a unique possibility to study small-sized and hard-to-reach populations. Register data does not have the problem of low response rates or respondents forgetting or withholding information.

A limitation of the study is that the sample represents only the “tip of the iceberg” among heavy substance-using mothers of small children (Gissler & Haukka, 2004). The register data do not give information on occasional heavy use or early stages of addiction, which can also be detrimental to the child. Another limitation is that the register data are based on peoples’ visits to various inpatient treatment or welfare services but do not include outpatient treatment. So we do not have data on those mothers who have visited primary health care or social welfare office because of their substance abuse problems, or on women who have no treatment contacts even if they may need them.

From the child’s point of view, both parents are important, and further studies should include data on both parents, not only mothers (see Jääskeläinen 2013).

Women’s use of alcohol has grown dramatically in Finland during the last 40 years, and the use of illegal drugs has also increased. It is thus quite likely that there are more substance-abusing mothers in the most recent birth cohort (2002) than in the first cohort (1991). Register systems are, however, in the process of change, which

makes comparison between different cohorts difficult, and the data from different years are not strictly comparable. Because of this limitation, we cannot be certain if the growing number of abusing mothers in our data is really caused by the changes in drinking and drug use habits, or if it is due only to changes in the registering practices. In the analyses we have concentrated on looking at each cohort separately.

The study shows that substance-abusing women and their small children are in many ways vulnerable. Substance-abusing mothers are socially disadvantaged: low income, lack of professional education, and single motherhood are common. In all these aspects the “alcohol only” (AM) mothers have more resources than the drug user group DM, and especially more so than the poly-drug user group ADM. Women abusing both alcohol and illegal drugs have the highest risk of poverty, mental health problems and having their child placed in out-of-home care.

According to our data, out-of-home care placements and income support have been the most commonly occurring social interventions in the lives of these mothers and their children. Child protection activities have a profound influence particularly on the child (Kestilä et al., 2012; Vinnerljung, 2005, 2008), but they are likely to have an impact on the mother as well. If the child protection work is carried out in co-operation with the mother, contacts with the social workers can at their best offer support for the mother, too, and reduce her load, perhaps even trigger a change in her lifestyle. On the other hand, out-of-home placements present a threat of loss of the child to the mother, and can also reduce her feelings of self-worth.

Comorbidity of mental illness and substance abuse is known to be fairly common in the population, and each problem seems to increase the possibility of the other (Aalto, 2007; Grant and Harford, 1995; Merikangas, 1998). In this study, comorbidity seems to be prevalent especially among those mothers of small children who had been abusing both alcohol and illegal drugs.

We also found a connection between substance abuse and the lack of education beyond the basic level. The high numbers of substance-abusing women needing long-standing income support is also noteworthy. It is impossible to say anything about the direction of causality, but low levels of education among these mothers are a serious risk for continuous poverty and unemployment. Help for substance-abusing women and their children requires co-operation between different kinds of health and social agencies. Prevention of substance abuse should also pay attention to those young people who are at risk of dropping out of school or of not getting any professional qualifications.

The widespread use of psychopharmacological drugs is puzzling. The question emerges as to whether the purchases of opioids, neurosis medicines, tranquillisers and sleeping pills are related to the women's comorbidity or their social marginalisation. Whilst psychoactive drugs can be used by substance-abusing people for medicating their mental health problems or for relieving the negative effects

of alcohol and illegal drugs, they present a further risk of being used as intoxicants, leading to dependency and overdosing. Do the medicaments provide these women with yet another source of intoxicants?

A health diagnosis is usually a reasonably reliable and valid indicator of a problem, but it is also an indication of a person at least potentially having received help or having looked for it. This study has shown that the substance-abusing mothers of small children have a lot of serious problems and live in vulnerable conditions. At the same time, the study shows that the social and health care professionals have a potentially important role in giving support to the mothers and their children, as the women have had contacts with many services. Prevention of harms to children of substance-abusing mothers should perhaps focus more on the possibilities offered by these contacts in different health and social services.

**Declaration of interest** None.

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