Familial consequences of alcohol use in the general population

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Submitted for the degree of PhD at the
Department of Psychology, Faculty of Social Sciences, University of Oslo

April 2012

Series of dissertations submitted to the
Faculty of Social Sciences, University of Oslo
No. 360

ISSN 1504-3991

Cover: Inger Sandved Anfinsen.
Printed in Norway: AIT Oslo AS.

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ACKNOWLEDGEMENTS

This work was undertaken at the Norwegian Institute of Public Health, and funded by grants from The Research Council of Norway. The study uses data from the Nord-Trøndelag Health Study, which has been in planning since before I was born. I am grateful for the tremendous work the HUNT employees have put into the data collection, and for being allowed to use this data set. I also have to thank all the inhabitants of Nord-Trøndelag, who have spent their time participating in the surveys. Without you, this study would not have been possible.

I also owe a lot to my two superb supervisors, Kristian Tambs and Espen Røysamb. Kristian: You have fantastic analytical skills, and (at least) one solution to every possible problem. Espen: You have a unique skill to motivate and make me understand my ideas. You are both generous and helpful, and I have enjoyed working with both of you. In addition, Kamilla Rognmo, Mariann Idstad, Helga Ask, and Kristin Gustavson have provided great support as co-authors.

The division of mental health has been a great place to work, much in thanks to Arne Holte and Ellinor F. Major, who have provided competent leadership during these years. Arne Holte has also helped shaping this project, and Kamilla Rognmo got the project funded. Also, Ted Reichborn-Kjennerud and Martin Mydske Nilsen have provided good leadership and management of my department.

During my time at the Division of Mental Health, I have had the chance to get to know many wonderful people, with whom I can discuss both research and other small and large aspects of life. You have not only made this an enjoyable place to work, but you also make me look forward to coming to work every morning, and I am very grateful for getting the chance to know you.

I am very grateful for the support I have received from all my friends, and the joy you bring into my life. I also want to thank my family, especially my parents, who have provided support over several decades. Last but not least, this work would have been impossible to complete without the love, help and support from Pernille.

Fartein Ask Torvik

Oslo, April 2012

SUMMARY

Family members of alcohol abusers are known to be at risk for a range of unfavourable outcomes, for example conduct problems and marital conflict. This thesis investigates school adjustment among adolescent children of alcohol abusers, the prospective association between heavy drinking and divorce, and the representativeness of a general population sample regarding alcohol use. All inhabitants in Nord-Trøndelag aged 20 years or older were invited to take part in the Nord-Trøndelag Health Study (HUNT 1) in 1984-1986 (N=77,230), and in a 1995-1997 (HUNT 2) follow up (N=65,216). The second wave also included adolescents aged 13-19 years (N=8,984). This study has several methodological advantages, such as high generalizability, multiple responders in each family, and a range of covariates available.

In the first paper, it was found that both heavy drinking and abstention predicted non-participation in HUNT 2, compared to people with light consumption, but only moderately. Also, adolescent report of having seen their parents drunk several times a week predicted non-participation, however, the majority of these parents participated. In conclusion, the HUNT study is thought to be fairly representative of alcohol abusers in the general population.

The topic of the second paper was how four areas of school adjustment were related to parental alcohol abuse. Adolescent children of alcohol abusers were found to have moderately higher scores on the impulse-control related dimensions conduct problems and attention problems, but to be equally satisfied with school and with their school results as were other children. Children of abstainers managed significantly better than children of light drinkers. Drinking among mothers appeared to be more strongly related to school adjustment than was drinking among fathers.

In the final paper, we investigated how alcohol use at baseline predicted divorce over the following years. Heavy drinking was a risk factor for future divorce, both among men and women. Compatibility in drinking, however, seemed to reduce the risk of divorce.

None of the findings could be fully accounted for by demographics or comorbid mental distress in the family. In conclusion, heavy drinking seems to be clearly, but modestly related to the functioning of the family on the studied outcomes.

LIST OF PAPERS

Paper 1

Torvik, F. A., Rognmo, K., & Tambs, K. (2012). Alcohol use and mental distress as predictors of non-response in a general population health survey: the HUNT study. *Social Psychiatry and Psychiatric Epidemiology, 47*, 805-816. doi:10.1007/s00127-011-0387-3

Paper 2

Torvik, F. A., Rognmo, K., Ask, H., Røysamb, E., & Tambs, K. (2011). Parental alcohol use and adolescent school adjustment in the general population: results from the HUNT study. *BMC Public Health*, *11*, 706. doi:10.1186/1471-2458-11-706

Paper 3

Torvik, F. A., Røysamb, E., Gustavson, K., Idstad, M., & Tambs, K. Discordant and concordant alcohol use in spouses as predictors of marital dissolution in the general population: results from the HUNT study. Revised version in press in *Alcoholism: Clinical and Experimental Research*.

Amendment

Since the submission of this dissertation to the Faculty of Social Sciences on April 20th 2012, a revised version on Paper 3 has been accepted for publication. The revision did not result in substantial changes in the conclusion.

1. INTRODUCTION

The main aim of this thesis is to investigate how alcohol abuse affects the families of alcohol abusers, i.e. their children, spouses, and the relationship between family members. Research has long pointed to an increased risk of negative outcomes among these families; however, several aspects of the methodology of previous studies need to be addressed. This thesis applies a public health perspective and investigates the general population. This introduction will first address drinking and alcohol abuse in general, how this may affect family members, and finally the specific topics of this study, which are the representativeness of general population samples with regard to alcohol use, school functioning among adolescent children of alcohol abusers, and the association between alcohol use and divorce.

1.1. ALCOHOL USE

1.1.1. Drinking

Due to the ease with which any sugar-containing drink can be fermented by yeasts into alcoholic beverages, drinking alcohol has been common among humans for longer than the recoded history (Homan, 2004). Alcohol is today the most commonly used psychoactive drug (if not counting coffee), and plays various social roles in societies around the world. In northern Europe, it is common to drink a lot of alcohol in relatively few settings (Horverak, 2006). More disinhibited behaviour is displayed, and often tolerated, maybe in part because of alcohol expectancies (Freeman, Friedman, Bartholow, & Wulfert, 2010; Jones, Corbin, & Fromme, 2001).

Alcohol is subject to control in most states. In present-day Norway, alcohol use is regulated with limitations on availability and marketing, in combination with taxation, which is likely to be effective in reducing drinking (Alcohol and Public Policy Group, 2010; Brand, Saisana, Rynn, Pennoni, & Lowenfels, 2007). The annual consumption in Norway has increased over the last decades, but it is a little lower than the European average (Edland-Gryt, Bryhni, Skretting, Lund, & Saunders, 2011).

1.1.2. Effects of alcohol

Alcohol is a powerful drug with a range of associated harms. Pharmacologically, alcohol "shares features with sedatives, hypnotics, and anxiolytics" (American Psychiatric

Association, 2000, p.191). Its neuropharmacology is not completely understood, and may be rather non-specific. Its relaxing, euphoric, and reinforcing effects may stem from its direct or indirect effects on opiate and cannabionoid synapses in the reward system (see Stahl, 2008). At higher doses, the depressant effect on the central nervous system may lead to exhaustion, unconsciousness, or even respiratory failure (Oscar-Berman & Marinković, 2007). It has a comparatively high potential for addiction and physical harm (Nutt, King, Saulsbury, & Blakemore, 2007), and approximately 15% of everyone who ever tries alcohol become dependent on it at some point in life (Anthony, Warner, & Kessler, 1994).

Since alcohol is so widespread, it's the most harmful drug at the population level. The majority of substance abuse is abuse of alcohol (Kessler et al., 2011; Kringlen, Torgersen, & Cramer, 2001). Over the last ten years, approximately 400 persons have died in Norway each year of causes directly related to alcohol use (Edland-Gryt et al., 2011). In the longer run, excessive alcohol use can also lead to addiction, cancers, hypertension, liver cirrhosis, and coronary heart disease, among other things (Corrao, Bagnardi, Zambon, & La Vecchia, 2004). The social consequences of overuse can also be tremendous, affecting the individual abuser, their family and friends, and society at large (e.g. Klingemann & Gmel, 2001). In addition to the human suffering associated with overuse, it costs the society a massive amount of money. Although experts disagree on whether such numbers are meaningful (Melberg, 2010), costs have been placed around 18-20 billion NOK each year (ca. €2.5 billion) (Gjelsvik, 2004), with similar per (capita costs) in other Western countries (Jarl et al., 2008)

1.1.3. Abuse and dependence

Which drinking patterns that will be perceived as alcohol abuse is to a large degree determined by social conventions and may vary between societies. There is not a clear distinction between abuse and non-abuse. Rather, there is a gradual decline in communality of more extreme drinking pattern, i.e., a left-skewed normal curve. The total consumption in a population is associated with drinking within each consumption group, so that both light drinkers and abusers are likely to drink more if the average consumption in the population increases (Skog, 1985).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) has more clearly defined diagnostic criteria. DSM-IV-TR (American Psychiatric Association, 2000) contains two relevant alcohol related diagnoses. Alcohol abuse is characterised by recurring problems on different areas of life, for example, with job or school performance, neglect of child care or household, by using alcohol in dangerous situations, or problems with the law.

Also, the abuse may persist even when the person knows that the use causes personal problems or is detrimental for their social relationships. Dependence is further characterised by development of tolerance for alcohol, withdrawal symptoms, or compulsive behaviour related to alcohol. There may be severe social consequences and a persistent wish or failed attempts to control the alcohol use. Full diagnostic and differential criteria are found in DSM-IV-TR. The criteria provided by International Statistical Classification of Diseases and Related Health Problems (ICD-10) are approximately the same (The World Health Organization, 1992). The ICD-10 diagnosis "harmful use" corresponds to "alcohol abuse" in DSM-IV. Persons who fulfil the criteria for alcohol dependence are per definition also abusing alcohol. "Alcohol abuse" may therefore be useful as a more common term. In this thesis, the term "heavy drinking" will be used when drinking is considered unidimensionally, regardless of what problems the drinking brings along. The term "alcohol abuse" will be reserved for situations when we additionally have information on alcohol related problems, although the way these terms are used may not necessarily completely correspond to the ICD or DSM diagnoses.

1.1.4. Characteristics of heavy drinkers

The risk of developing alcohol abuse is affected by cultural and social factors (Ahern, Galea, Hubbard, Midanik, & Syme, 2008), individual variation in metabolism (Chen et al., 1999), and psychological traits such as extraversion, impulsivity, sensation seeking, and antisocial personality (Cloninger, Sigvardsson, & Bohman, 1988; Compton, Conway, Stinson, Colliver, & Grant, 2005; Dick et al., 2010; Flory, Lynam, Milich, Leukefeld, & Clayton, 2002). People who have few social roles to fulfil are also more likely to be heavy drinkers (Kuntsche, Knibbe, & Gmel, 2009). Liability to substance dependence has large non-drug-specific contributions (Kendler, Myers, & Prescott, 2007). Genetically informed studied have found liability to alcohol dependence to consist of several genetic and unique environmental factors (Kendler, Aggen, Prescott, Crabbe, & Neale, 2011). Most studies show that genetic variability explains approximately 40-60% of the individual variation in liability to alcohol abuse in Western societies (Ducci & Goldman, 2008; Goldman, Oroszi, & Ducci, 2005; Kendler, Aggen, Knudsen, et al., 2011; Prescott & Kendler, 1999), but some heritability estimates are above 70% (Ystrom, Reichborn-Kjennerud, Aggen, & Kendler, 2011).

Moreover, there is genetic co-variation between alcohol abuse and other forms of externalizing psychopathology, such as antisocial behaviour and conduct problems (Kendler, Prescott, Myers, & Neale, 2003), i.e., some of the same genes contribute to both. Most of the

genetic association between alcohol abuse and conduct problems (90%) is due to personality traits of behavioural under-control (Slutske et al., 2002).

Also, depression has been suggested as one likely way into alcoholism for adults (Hussong, Flora, Curran, Chassin, & Zucker, 2008). Interestingly, it has been found that alcohol abuse is likely to be affected by the same (non-shared) environmental factors that lead to depression (Kendler et al., 2003; Kendler, Aggen, Knudsen, et al., 2011). When it comes to socioeconomic factors, people with higher education drink more totally while low socioeconomic status is related to more binge drinking and problems with alcohol (Mulia & Karriker-Jaffe, 2012).

1.1.5. Abstention

On the other end of the alcohol use scale, we find those individuals who abstain totally from the use of alcohol, who constitute approximately 10% of the population in Norway (Skogen, Harvey, Henderson, Stordal, & Mykletun, 2009). The partially religious temperance movement was strongest in the 19th and 20th centuries, due to high levels of alcoholism and social problems among labourers (Barrows & Room, 1991). The motives for abstention today are diverse: motives include religion and ideology, health, and dislike of the taste or effects of alcohol (Bernards, Graham, Kuendig, Hettige, & Obot, 2009). Also, some abstainers are sick-quitters, who may have more in common with heavy drinkers. As a group, abstainers have been found to be considerably different from people with very low consumption in some respects. For instance, people labelling themselves as being total abstainers have higher symptom scores for anxiety and depression (Skogen et al., 2009), smaller social networks (Graham, 1998), and are more religious (Michalak, Trocki, & Bond, 2007) in comparison with people with very low consumption.

1.1.6. Prevalence

Prevalences vary between studies and geographies. However, the lifetime prevalence of alcohol abuse and dependence according DSM-criteria was found to be 8.5% (Kessler et al., 2011) in a study of 14 countries. A weighted average of the 12-month prevalences in Oslo (Kringlen et al., 2001) and Sogn og Fjordane (Kringlen, Torgersen, & Cramer, 2006) is approximately 8.2% for men and 3.0% for women (Torvik & Rognmo, 2011).

It is difficult to find precise numbers of affected family members, as few such studies use standardized criteria for alcohol abuse. In Norway, between 50,000 and 100,000 persons

have a partner with ”risky” alcohol consumption (Rossow, Moan, & Natvig, 2009), which corresponds to 3% to 6% of everyone married (Statistics Norway, 2011a).

The proportion of children who have parents with risky consumption or who have had alcohol problems at some point in life has been estimated as high as 20 to 25% in USA (Grant, 2000), Sweden (Ljungdahl, 2008), Australia (Maloney, Hutchinson, Burns, & Mattick, 2010), Germany (Lieb et al., 2002), and Norway (Hansen, 1985). However, such a large group is unlikely to be noteworthy affected. It has been estimated that in the magnitude of 8% of Norwegian children have at least one parent who has fulfilled the criteria for a DSM alcohol abuse or dependence diagnosis during the last 12 months (Torvik & Rognmo, 2011), which is also in accordance with other estimates (Rossow et al., 2009). Number of seriously affected families is likely to be smaller. Although alcohol abuse is quite common, only a fraction of those qualifying for an abuse diagnosis are found in clinics (Compton, Thomas, Stinson, & Grant, 2007; Hasin, Stinson, Ogburn, & Grant, 2007). For example, in Denmark, 4.4% of children have parents who have been registered with any alcohol related diagnosis (Christoffersen & Soothill, 2003), and 1.2% of Swedish children had their parents in a closed ward due to alcohol or drug related problems during a four year period (Ljungdahl, 2008).

1.2. EFFECTS ON FAMILY MEMBERS OF ALCOHOL ABUSERS

It has long been acknowledged that alcohol use interferes with family life, and one of the rationales behind the US prohibition of alcohol (1920-1933) was the fear that drinking should interfere with breadwinners ability to provide for their family (Ostermann, Sloan, & Taylor, 2005). Physical risks associated with maternal consumption during pregnancy have been well-described for at least one century (Prince, 1910). Modern research on children of alcohol abusers started in the 1960s (Sher, 1997). Over time, a vast amount of research has investigated a range of effects of alcohol use on family members, and it is well-documented that there is an overrepresentation of psychological problems and other negative outcomes in the families of alcohol abusers, both among children growing up in such families and with regard to the functioning of the marital relationship.

1.2.1. Effects on children of alcohol abusers

The list of purported consequences of having an alcohol abusing parent is long. First, children of alcohol abusers have a highly increased risk of becoming abusers of alcohol or other substances themselves, maybe around three times higher for alcohol abuse (Cloninger, Bohman, & Sigvardsson, 1981; Kendler et al., 2003; Lieb et al., 2002; Merikangas et al.,

1998; Slutske et al., 2008). There are also robust findings on other externalizing behaviours, such as inattention, hyperactivity, conduct problems, delinquency and impulsiveness (Barnow, Schuckit, Smith, Preuss, & Danko, 2002; Hill, Tessner, & McDermott, 2010; Hussong, Huang, Curran, Chassin, & Zucker, 2010; Knopik, Jacob, Haber, Swenson, & Howell, 2009; Marmorstein, Iacono, & McGue, 2009). Children of alcohol abusers may also have impaired cognitive abilities, which may be reflected by their lowered academic achievement (Poon, Ellis, Fitzgerald, & Zucker, 2000), and deficits in social competence (Hussong, Zucker, Wong, Fitzgerald, & Puttler, 2005). In addition, many studies point to an increased risk of internalizing symptoms, such as low self-esteem, depression, anxiety, as well as and other mental disorders (Díaz et al., 2008; Harter, 2000; Hussong, Flora, et al., 2008; Sher, 1997; Sher, Walitzer, Wood, & Brent, 1991). Whether parental alcohol use leads to internalizing problems is, however, disputed (Malone, Iacono, & McGue, 2002; Reich, Earls, Frankel, & Shayka, 1993). A Danish registry study (Christoffersen & Soothill, 2003) followed the cohort born in 1966 until 1993, and found that children of alcohol abusers had higher rates of mortality, unemployment and violence convictions. They were also at risk of serious mental disorders and suicide at the crude level, but not when controlling for demography. There are, however, large variations in outcome.

For some time, a branch of research into adult children of alcohol abusers claimed to have found that they shared certain unique personality traits (Woititz, 1984). It has later been found that these characteristics are mainly horoscope-like Barnum-statements, and it is today acknowledged that parental alcohol abuse may increase the risk of outcomes that can be observed in other children experiencing stress as well (Fineran, Laux, Seymour, & Thomas, 2010; Logue, Sher, & Frensch, 1992).

1.2.2. Consequences for partners and relationships

Living with an alcohol abuser can also have serious consequences for the spouse and for the relationship between the spouses. There are increased risks for inter-partner conflict, violence, poor relationship functioning, dissatisfaction, and divorce (Collins, Ellickson, & Klein, 2007; Marshal, 2003; Ostermann et al., 2005; Waldron et al., 2011). Alcohol is involved in 25-50% of all episodes of domestic violence (Leonard, 2001). Besides of the relationship outcomes, having an alcohol abusing spouse is associated with higher risk of mental disorders, such as anxiety and depression (Dawson, Grant, Chou, & Stinson, 2007; Homish, Leonard, & Kearns-Bodkin, 2006). However, some studies do not find significantly more psychiatric problems in spouses of alcohol abusers, or only among certain subgroups in longitudinal studies (Homish

et al., 2006; Schuckit, Smith, Eng, & Kunovac, 2002). Compatibility in alcohol use may also be of importance (Homish & Leonard, 2007). If the couple has children, the poor relationship between the parents may add to the burden of having an alcohol abusing parent.

1.3. THEORETICAL PERSPECTIVES: WHY ARE THESE FAMILIES AT RISK?

There are several perspectives that can account for the heightened risks of psychological difficulties among family members of alcohol abusers. The explanations include physiological effects of alcohol on the body, social environment, and genetic dispositions. Combinations and interactions between these mechanisms are also important.

1.3.1. Prenatal effects of alcohol

Prenatal exposure to alcohol may harm the developing fetus and lead to a variety of disadvantages during childhood and adult life. Most seriously, the child may be born with fetal alcohol syndrome (FAS), characterised by physical peculiarities and mental retardation, or the milder variant fetal alcohol spectrum disorder (FASD) (O'Connor & Paley, 2009). Prenatal exposure to even small doses of alcohol is likely to increase the risk for subtle damages in the brain and psychopathology such as learning and behaviour difficulties (Sayal, Heron, Golding, & Emond, 2007; Sayal et al., 2009; Streissguth, Barr, & Sampson, 1990), maybe in a linear way (Brown, Olson, & Croninger, 2010). It is, however, disputed whether very small doses of alcohol pose a threat to fetus (Kelly et al., 2012). Moreover, drinking is correlated with smoking, and prenatal exposure to nicotine could also have an impact on the fetus (Knopik et al., 2009). While one cannot exclude that subtle brain damages not covered by FASD partly account for the increased risk of psychopathology in children of alcohol abusers, it is out of the scope of this thesis to go further into the biological effects of alcohol.

1.3.2. Psychosocial environment among offspring of alcohol abusers

The psychosocial environment may be of importance in explaining why more problems are observed in the families of alcohol abusers. The risk may be transmitted by stress caused by inadequate parenting, a stressful family environment, and social strains nested in the context.

The parenting skills are likely to be impaired among alcohol abusers (Eiden, Leonard, Hoyle, & Chavez, 2004; Ellis, Zucker, & Fitzgerald, 1997; Jacob, Haber, Leonard, & Rushe, 2000). The parents may not be able to take care of their children, and in grave cases, the caregiver-roles may be reversed. These families have a highly increased risk of emotional and physical abuse and neglect (Dube et al., 2001). A lack of parental sensitivity and warmth

towards their children may lead to poor self-regulation among the offspring, externalising behaviour (Eiden, Colder, Edwards, & Leonard, 2009; Eiden, Edwards, & Leonard, 2006, 2007), and poor social competence (Hussong et al., 2005). Also, the stress of having to cope with parental alcohol abuse may surface as depressive symptoms (Hussong, Cai, et al., 2008). Besides of being stressful when it goes on, this may also increase the long-term risk of disorders such as posttraumatic stress disorder, and major depressive disorder when the children grow up (Widom, 1999; Widom, DuMont, & Czaja, 2007).

Alcohol abuse may lead to dysfunctional interaction patterns between the family members, such as quarrelling between the parents, family conflict, and an unstable, unpredictable and disorganized family environment (Burnett, Jones, Bliwise, & Ross, 2006; Ross & Hill, 2001). Haugland (2005) found that preservation of family routines was especially important for child adjustment. The risk of stressful life experiences is highly increased among children of alcohol abusers, for example, parental separation is three times more common among these children, and they are also more likely to experience parental imprisonment or parental suicidal behaviour (Christoffersen & Soothill, 2003). These stressful experiences may lead to internalizing symptoms (Hussong, Cai, et al., 2008; Hussong, Flora, et al., 2008).

Also, parental alcohol abuse is usually associated with other risk factors (Eiden et al., 2009; Fitzgerald, Davies, & Zucker, 2002). Alcohol abuse may affect children through impacting their families' social and economic resources, employment situation, social network et cetera. Alcohol abuse: The alcohol abuse may also lead to other mental illnesses or divorce among the parents, which put additional strains on the children. The families could feel stigmatized by their surroundings, and become isolated. In sum, these burdens may make the children more susceptible to maladjustment (Essex et al., 2006).

1.3.3. Genes and heritability

Research on twins, adoption studies, and studies on children of twins has made it possible to distinguish between effects of the environment and of genetics towards explaining variations between individuals in a population.

The genetic perspective is especially good at explaining why children tend to develop the same disorders or other phenotypes that their parents had. One example is when children of alcohol abusers develop alcohol or substance abuse, since they inherit a range of traits that make them more liable to alcohol abuse (Ducci & Goldman, 2008; Hiroi & Agatsuma, 2005). The genetic contributions to cross-concordance are less obvious.

In addition to disorder-specific genetic liabilities (Kendler et al., 2003) there is also a genetic overlap between alcohol abuse and other externalizing behaviours. One should therefore expect children of alcohol abusers to evidence an increased risk of externalizing psychopathology. As mentioned above, they undoubtedly are at risk for a range of such behaviours, and indeed, most genetically informed studies on the topic find that the link between alcohol use in parents and externalizing behaviour in the offspring, such as conduct disorder and ADHD, is mainly due to genetic co-variation between the disorders (Haber, Jacob, & Heath, 2005; Knopik et al., 2009). That means that most of the variation in risk of externalizing problems associated with parental alcohol use is probably not due to experiences with alcohol per se, but rather by genes affecting both the probability of parental alcohol abuse and the risk of poor outcomes in their children.

While there is strong genetic comorbidity for internalizing disorders, disorders in different categories, for example alcohol abuse (externalizing) and depression or anxiety (internalizing) have less of a genetic overlap (Cerdá, Sagdeo, Johnson, & Galea, 2010). The phenotypic correlation between alcohol use or externalizing disorders on the one hand, and internalizing disorders on the other is rather low (Kendler, Aggen, Knudsen, et al., 2011; Tambs, Harris, & Magnus, 1997). The co-occurrence may be due to a common environmental factor affecting both the risk of alcohol use and internalizing disorders (Kendler, Aggen, Knudsen, et al., 2011; Kendler et al., 2003), or due to genetic covariance (Tambs et al., 1997). In either case, one should not expect children of alcohol abusers to carry an especially strong genetic risk for internalizing disorders. Indeed, the risk of internalizing symptoms in children of alcohol abusers is weaker than for externalizing symptoms, and there is not agreement in the literature whether they are at long-term risk for such disorders at all (Chassin, Pitts, DeLucia, & Todd, 1999; Hussong, Flora, et al., 2008; Malone et al., 2002).

1.3.4. Nature and nurture

While non-shared environment (including measurement error) plays a relatively large role in twin models, shared environment is often found to be of modest importance on the population level (e.g. Cerdá et al., 2010), although estimates vary between studies. Studies on children of discordant twins have failed to find effects of the family environment on the risk of alcohol abuse or conduct problems among children of alcohol abusers (Haber et al., 2005; Slutske et al., 2008). However, for the entire population, regardless of whether the parents are alcohol abusers or not, conduct problems have been found to be moderately influenced by shared

environment (Kendler et al., 2003). Twin studies aim at explaining variations between individuals within a population, so the results may vary between cultures.

Genetic factors do certainly take part in a complex relationship with environmental factors. For example, individuals choose or influence their environment according to genetic predispositions. Research also indicates that genetic risk moderates the importance of life stress on the development of mental disorders. Jacob et al. (2003) found significant environmental contributions of parental alcohol abuse, and that a low-risk environment could moderate the genetic risk. Another concrete example of the interaction between genes and environment (however not specifically regarding alcohol abuse) is that the effect of environmental stress on depression appears to be moderated by a certain gene variation affecting serotonin transportation (5-httlpr), i.e. that stress may trigger depression in individuals predisposed for it, while stress is less harmful for people without such predispositions (Caspi et al., 2003; Karg, Burmeister, Shedden, & Sen, 2011). Since most children with alcohol abusing parents also live with these parents, the genetic vulnerability and environmental risk is usually experienced simultaneously. Together, genetic liabilities and environmental stressors could overtax the children's coping resources and result in depressive symptoms (Graber, 2004; Hussong, Cai, et al., 2008).

1.3.5. How long do the risks last for children?

Having alcohol abusing parents is a burden while it is going on. There does not, however, seem to be agreement in the literature as to what degree the consequences for these children are primarily temporary, resulting from real-time processes (Ljungdahl, 2008; Roosa, Beals, Sandler, & Pillow, 1990) and to what degree the consequences are distal, time-invariant (Hussong, Cai, et al., 2008). While some find that the increased risk of depression among children of alcohol abusers persist into old age (Cuijpers, Steunenberg, & van Straten, 2006), such studies are not longitudinal and may be tainted by memory biases. Roosa et al. (1990) found only short-term effects. Twin studies have shown that shared environment plays a certain role in the childhood. However, in the longer run, when the children become adolescents and adults, the effects of shared environment seem to wear off, with genetics explaining most of the association between mental disorders in parents and offspring (Bergen, Gardner, & Kendler, 2007). This may be due to changes in gene expression, or because individuals to a larger degree select their environment according to their own genetic dispositions as they become older, i.e. increased genotype-environment correlation (Bergen et

al., 2007). A viable interpretation may thus be that most long-term effects are genetic, with some additional short-term effects due to stress.

1.3.6. Marital discord and alcohol as a stressor

The various consequences proposed for the partners and marriages of alcohol abusers may be explained in different ways. First, heavy drinking is stressful for marriages and may lead to marital discord. Excessive alcohol use could interfere with the every-day function of the abuser and disrupt daily tasks, leading to spousal stress and conflict (Collins et al., 2007; Kearns-Bodkin & Leonard, 2005; Leadley, Clark, & Caetano, 2000; Marshal, 2003; Zweben, 1986). Alcohol abusing couples' interactions have also been found to be characterized by less positive and more negative behaviours (Marshal, 2003).

Although some theorize that alcohol use can relieve stress, and that social drinking may be associated with better relational functioning, there are clearly higher rates of marital discord among alcohol abusers (Marshal, 2003). This marital discord is a likely explanation for outcomes such as the increased risk of poor marital satisfaction and thereby divorce. This can moreover be hypothesised to contribute to more violence between the spouses and to mental disorders in spouses of abusers (Homish et al., 2006; Tempier, Boyer, Lambert, Mosier, & Duncan, 2006), although some contest this (Cornelius, Kirisci, Reynolds, Homish, & Clark, 2008; Klingemann & Gmel, 2001; Schuckit et al., 2002). Also, there may be a bidirectional relationship between alcohol use and partnership satisfaction – poor relationship satisfaction could lead people to drink more, and vice versa – and third factors underlying both alcohol abuse and marital discord cannot be ruled out.

1.3.7. Selection of spouses and cross-concordance

Regarding outcomes observed in the spouses of alcohol abusers, it is possible that selection could also account for this, i.e. that people who marry alcohol abusers share some characteristics that possibly make them more prone to mental disorders. Due to assortative mating, spouses of alcohol abusers could share some traits with the alcohol abusers. Cornelius et al. (2008) found that only wives of alcohol or substance abusers who abused substances themselves had higher risk for other psychiatric disorders. Also, depression and alcohol abuse seem to be affected by the same environmental factors (Kendler et al., 2003), so when the spouses have the same environmental exposures, these factors could cause both abuse and depression. It is unclear to what degree there is a cross-concordance between alcohol abuse

and anxiety and depression, with conflicting findings (Low, Cui, & Merikangas, 2007; Maes et al., 1998).

1.3.8. Spousal concordance in drinking

As mentioned, people who marry resemble each other due to assortative mating (Grant et al., 2007; Low et al., 2007), and also become more equal to one another during marriage, due to mutual influence, or shared environment (Ask, Rognmo, Torvik, Røysamb, & Tambs, 2011; Leonard & Mudar, 2004; Maes et al., 1998). The result is that approximately half of alcohol abuse among married women takes place in the context of alcohol abuse in the husband (Lieb et al., 2002). For children, this implies that a large proportion of children with alcohol abusing parents have two parents who abuse alcohol, putting them at especially high risks.

Regarding spouses and marital functioning, some studies find that concordant heavy drinkers experience the malignant factors of alcohol abuse in double doses; for example Haber & Jacob (1997) found that couples concordant in heavy drinking experience maladaptive marital outcomes, such as being more negative and less congenial. However, more research seems to indicate that compatibility is important regarding alcohol use. Couples concordant in heavy drinking are likely to have similar behaviours and attitudes towards drinking, and therefore to fight less and to be less stressed about drinking, leading to higher marital satisfaction. Indeed, concordant drinking has been found to predict marital satisfaction, while discordant drinking couples have also been found to have lower marital quality than couples where both or none were drinking heavily (Homish & Leonard, 2005, 2007; Leadley et al., 2000; Mudar, Leonard, & Soltysinski, 2001). As a consequence of less stress and marital satisfaction, they may also have a lower risk of negative outcomes like divorce (Ostermann et al., 2005), depression, violence (Quigley & Leonard, 2000), et cetera.

1.4. VARIATIONS IN OUTCOMES

There are large variations in outcomes, and many children who grow up with alcohol abusing parents do not develop any significant problems (Christoffersen & Soothill, 2003; Ellis et al., 1997). There are many unknown factors regarding causality, individual risk, and mediating variables. However, problem levels seem to be especially high for children from families struggling with several problems at the same time (Foley et al., 2001). Demographic factors may influence the outcome of parental alcohol abuse (Christoffersen & Soothill, 2003). In addition, the gender of the alcohol abusing parent may be of importance (Christoffersen & Soothill, 2003; Corte & Becherer, 2007). Resilient children also have higher IQ, lower sensation

seeking, and better social networks (Fergusson & Lynskey, 1996). Some individuals may develop increased self-esteem by having to care for parents and younger siblings (Walker & Lee, 1998). Also, some research indicate that steady drinking may be less detrimental to the family than recurring episodic drinking (Kahler, McCrady, & Epstein, 2003).

1.4.1. Comorbidity and accumulation of risks

It is uncertain to what degree alcohol use is a risk factor in itself. A part of the increased risk of negative outcomes can stem from other comorbid psychopathology, social inequalities or differences in lifestyle among those who abuse alcohol. The majority of people with addiction problems who receive help (three quarters or more) also have other psychiatric disorders (Sellman, 2010; Tómasson & Vaglum, 1995). Most studies have not adequately controlled for comorbid psychopathology (Ohannessian et al., 2004). Therefore, it is hard to disentangle the effects of alcohol abuse from the effects of co-morbid conditions. If such comorbid conditions are not controlled for, the effects of alcohol abuse will be overestimated. For example, Ohannessian et al. (2004) found that 71% of alcohol abusers recruited though clinics had other co-morbid psychiatric problems, and that only children of alcohol abusers with co-morbid disorders were at risk. Antisocial diagnoses are strongly overrepresented among alcohol abusers (Compton et al., 2007; Kendler et al., 2003; Kessler et al., 1997), and antisocial personality may be particularly predictive of poor adjustment in children of alcohol abusers (Moss, Baron, Hardie, & Vanyukov, 2001). One study found that there was only an increased risk of negative inter-spouse behaviours among alcohol abusers who were also antisocial (Jacob, Leonard, & Haber, 2001), another that intellectual functioning may most affected in children of alcohol abusers who are also antisocial (Poon et al., 2000). Clinical studies that have excluded patients with other illnesses have failed to find any association between psychosocial functioning and alcohol abuse (Giunta & Compas, 1994; Jacob & Leonard, 1986; Neff, 1994). Preuss, Schuckit, Smith, Barnow, & Danko (2002) found that parental alcohol abuse was not an independent risk factor for internalizing disorders in children when controlling for internalizing disorders in the parents. Hussong, Flora et al. (2008), however, found such effects. If spouses of alcohol abusers have higher rates of psychopathology, as discussed previously, these could add together to make the family situation problematic.

In addition, some of the effects may also be confounded by other characteristics of those who abuse alcohol, such as low socioeconomic level. Low education is associated with both alcohol problems (Mulia & Karriker-Jaffe, 2012) and mental health (Tambs et al., 2012).

The association between parental alcohol abuse and mental illness turned out non-significant in a Danish registry study when demographics were controlled for (Christoffersen & Soothill, 2003).

The aggregation of various risk factors within the same families may account for the poor outcomes (Ellis et al., 1997; Graber, 2004). For example, the divorce and depression in spouses of alcohol abusers may have disadvantageous effects on children. These burdens are likely to make the children more prone to maladjustment, although each risk factor usually explains only a small part of the variance in outcomes (Essex et al., 2006).

Thus, in studies that have not controlled for other psychopathology or demographics, the risk estimates cannot automatically be assigned to alcohol abuse. Rather, the risks may either be due to these factors or due to the accumulation of risk factors in the family (Ohannessian et al., 2004). Because of this, there is a need for studies that include more covariates, especially mental distress.

1.4.2. Gender

Different effects of alcohol abuse in men and women are also understudied (Hill et al., 2010), since most studies have focused either on relatives of alcohol abusing men, or on the prenatal effects of maternal alcohol use on the fetus. Corte & Becherer (2007) found that maternal and paternal alcohol dependence predicted different psychopathology in the offspring. Their sample size was however small, so the results are uncertain. In a previously mentioned registry study, Christoffersen & Soothill (2003) found that maternal alcohol abuse had higher associations with most outcomes than had paternal abuse. Dube et al. (2001) also found that maternal alcohol use had stronger effects on a majority of outcomes. This may reflect that mothers are more important than fathers as caregivers, or perhaps that alcohol abuse in some respects is more extreme in women, as fewer women abuse alcohol. Relatively few studies have investigated families of alcohol abusers with data from both parents or spouses. Therefore, more studies that can control for the alcohol use of both men and women are needed.

1.5. SOME LIMITATIONS IN PREVIOUS RESEARCH

1.5.1. Sample and classification bias

Much of the research on alcoholism in family systems is based on people who have received help for their problems. While studies based on samples from clinics can yield rich

descriptions of subjective experiences, most people with alcohol problems don't seek or receive treatment (Compton et al., 2007; Hasin et al., 2007). Families that receive help for alcohol problems are likely to be different from those who don't, and quantitative studies based on such samples therefore may not be representative for everyone with an alcohol problem (Lieb et al., 2002). Abusers recruited from clinics are likely to have more severe drinking problems and more co-morbid disorders compared to other heavy drinkers, and maybe other kinds of additional problems (Windle, 1997). Many studies have not controlled for comorbidity. In the clinic, one will also find the persons who have faced the worst consequences of drinking. This may have led to inflated effect sizes. Clinically recruited samples are usually small and consequently have low statistical power.

Studies based on official hospital registries, such as Christoffersen & Soothill (2003) have representative information on a very large number of individuals, and therefore high power and good statistical control. On the other hand, they can only identify cases that have been registered by the health services as alcohol abusers. Hence, those classified as alcohol abusers may not be more representative for alcohol abusers in general than those found through clinical studies. This possible biased representativeness of alcohol abusers is a major weakness with studies based on clinical samples or registries. As many studies are not based on random samples of alcohol abusers, there seems to be a need for studying community based samples that also include less severe cases of alcohol abuse (Kendler, Davis, & Kessler, 1997; Lieb et al., 2002).

1.5.2. Response bias

Since responders may provide socially desirable answers, amount of consumed alcohol and problems related to alcohol use are likely to be underreported. Another limitation pertaining to most studies with self-report data is response bias due to only having a single responder. When all the measures are reported by the same person, measurement error on exposure and outcome can be correlated. Response style and mood congruent memory can affect answers to both exposure and outcome and make the measurement error correlated, i.e., falsely making two variables correlated or inflating correlations. Studies relying on retrospective self-report, use of "adult children of alcoholics" tests, or highly subjective definitions of abuse (e.g. Cuijpers, Langendoen, & Bijl, 1999; Cuijpers et al., 2006; Hanson et al., 2006; Hyphantis, Koutras, Liakos, & Marselos, 1991) are especially vulnerable for this bias. Moreover, biased attention to the topic of the study may lead participants to look for causes of present problems.

Therefore, more studies on alcohol abuse with independent report from different family members are needed.

1.6. Background for the studies

While it is well-established that some outcomes occur frequently in the families of alcohol abusers, there is more uncertainty associated with other outcomes. This is due to a combination of lack of control groups, lack of control for comorbid disorders, possible sample bias, possible response bias, and a lack of studies in general.

1.6.1. Studying alcohol use in the general population

By recruiting responders from the entire population regardless of whether they have problems with alcohol or not, one has the potential to detect untreated cases and achieve results that are more representative and generalizable to a larger range of alcohol problems. Population studies usually have large samples with many cases, making them well-powered, and likely to detect group differences when they exist. Moreover, questionnaire based population studies, such as the Nord-Trøndelag Health Study, have a range of covariates available, and linking data between family members would solve the single-responder issue. Studying families of alcohol abusers this way would be a major contribution to the research field. The non-clinical studies with representative population samples and independent reports of alcohol that do exist usually study heritability of alcohol or substance use (Lieb et al., 2002; Slutske et al., 2008).

However, to take advantage of the general population studies, it is critical that the alcohol abusers take part in such surveys. If the people with the most severe alcohol problems don't response to such surveys, it may lead to wrong estimates of the prevalence of problems and, probably to a smaller degree (Knudsen, Hotopf, Skogen, Overland, & Mykletun, 2010), wrong estimates of associations between variables (Miller & Wright, 1995). It is therefore important to know to what degree the net sample of population studies are different from what they are meant to represent. The importance of this issue is underlined by the fact that response rates of population based studies have been decreasing during the last decades.

It has previously been found that people with a high alcohol consumption are less likely to take part in population studies than others (Buckner et al., 2008; Goldberg, Chastang, Zins, Niedhammer, & Leclerc, 2006; Thygesen, Johansen, Keiding, Giovannucci, & Grønbaek, 2008). On the other hand, methodologically different non-response studies have found that people with low or no alcohol consumption are underrepresented (Hill, Roberts,

Ewings, & Gunnell, 1997; Lahaut et al., 2003; Lemmens, Tan, & Knibbe, 1988; Stranges et al., 2006) Therefore, non-response studies with larger samples and better methods are needed.

1.6.2. Parental alcohol use and school adjustment

Regarding outcomes among children, this thesis will focus on school adjustment. As children of alcohol abusers are more likely to become unemployed when they grow up (Christoffersen & Soothill, 2003), understanding how they function in school may contribute to improving their life chances. School adjustment can broadly be defined as the degree to which adolescents "become comfortable, engaged and successful in their school environment" (Ladd, Kochendrefer, & Coleman, 1997, p. 1183).

Theoretically, the impaired parenting, social strains, and genetic risk for externalizing behaviour are likely to make the children of alcohol abusers more likely to exhibit poor adjustment in school. Several of the problems exhibited among children of alcohol abusers are likely to be intertwined with school adjustment and abilities. The intellectual functioning, conduct problems, and attention problems seen among children of alcohol abusers must certainly be considered inherent aspects of school adjustment (Nettles, Caughy, & O'Campo, 2008; Polderman, Boomsma, Bartels, Verhulst, & Huizink, 2010). Moreover, if they have elevated rates of depression, anxiety or lower self esteem, this may also affect their adjustment at school. They may therefore also struggle with satisfaction at school and with their academic performance.

Indeed, children of alcoholics have been found to evidence lower academic achievement than other children, from elementary school to college (Howell, Lynch, Platzman, Smith, & Coles, 2006; Hyphantis et al., 1991; Marcus, 1986; Murphy, O'Farrell, Floyd, & Connors, 1991; Poon et al., 2000; Sher et al., 1991). Teachers have also rated children of alcoholics as more impulsive than other children in the school context (Knop, Teasdale, Schulsinger, & Goodwin, 1985). There are, however, few studies on what parts of school adjustment that are impaired in children of alcohol abusers, and may precede hard outcomes such as low educational attainment or unemployment.

1.6.3. Alcohol use and divorce

Excessive drinking may affect spouses and marital functioning in various ways; one of the more drastic outcomes is dissolution of the marriage (Collins et al., 2007; Ostermann et al., 2005; Waldron et al., 2011). The increased divorce rates among heavy drinkers may be due to heavy drinking affecting marital quality or daily functioning (Collins et al., 2007; Kearns-

Bodkin & Leonard, 2005; Leadley et al., 2000; Marshal, 2003; Zweben, 1986), or alternatively by unmeasured third-factors, such as personality traits, attitudes, religiosity, or initial marital satisfaction. In addition to being a stressful experience for the adults, with possible health consequences (Amato & James, 2010), divorce is a likely risk factor for mental distress in their children (Størksen, Røysamb, Gjessing, Moum, & Tambs, 2007; Størksen, Røysamb, Holmen, & Tambs, 2006), so children of divorced heavy drinkers will face at least two risk factors at the same time.

One might expect couples with two heavy drinkers to be at a higher divorce risk than couples with one heavy drinker, as the malignant factors are experienced in double doses (Marshal, 2003). However, several studies indicate that most of the detrimental effects of alcohol use on relationship stem from differences in alcohol use, as couples with one heavy drinker have lower marital quality than couples with two or none heavy drinkers (Homish & Leonard, 2007; Leadley et al., 2000; Mudar et al., 2001; Roberts & Leonard, 1998). While there are many studies on marital functioning, I only know of one single study that has investigate alcohol and divorce prospectively with data from both spouses (Ostermann et al., 2005). In that study, discordant alcohol use was found to be more predictive of future divorce than the level of alcohol use itself. In general, having similar personalities promotes relationship quality (Gonzaga, Campos, & Bradbury, 2007).

Although there is a strong link between relationship dissatisfaction and dissolution, some research points out that the two are influenced by partially different factors (Rogge & Bradbury, 1999). More studies on the relationship between alcohol use and divorce with data from both spouses are therefore needed.

2. RESEARCH AIMS

The objective of this thesis is to investigate the families of alcohol abusers with regard to psychological functioning among offspring and spouses, and the relationship between the spouses. I will investigate school adjustment in children of alcohol abusers, and study to what extent high alcohol consumption is a risk factor for divorce. Being a general population study, the sample is based on data from cases largely undetected by clinics, and on independent reports from different family members. Also, this study aims at finding out to what degree alcohol abusers are represented in general population studies. This thesis also aims at investigating sex differences in the effects of alcohol abuse on the family, and how mental health functions as a covariate, along with demographics. More specifically, the aims are to investigate the following topics:

2.1. PAPER 1

Paper 1 investigates the representativeness of the HUNT study sample, i.e., whether the responders are systematically different from the non-responders, regarding alcohol use, mental health and other predictors.

2.2. PAPER 2

Paper 2 investigates the relationship between parental drinking and four areas of school adjustment in adolescent children. The unique contributions of maternal and paternal drinking are studied, along with possible confounding or mediation of psychosocial variables.

2.3. PAPER 3

Paper 3 investigates how alcohol use among husbands and wives predicts marital dissolution through divorce or separation, and whether spouse similarity or dissimilarity in alcohol use is associated with marital dissolution.

3. METHODS AND MATERIAL

3.1 SAMPLE AND DESIGN

3.1.1. The Nord-Trøndelag Health Study (HUNT)

The studies in the present thesis utilize data from two sources: i) Questionnaire data from The Nord-Trøndelag Health Study (Helseundersøkelsen i Nord-Trøndelag – HUNT), a general population study among adults and adolescents, and ii) governmental population registries with data on demography and kinship administered by Statistics Norway. The HUNT studies and the population registries have been linked, and those sources have provided data for a large number of studies.

Nord-Trøndelag is a county situated in the middle of Norway. Its 2011 population was 132,000 (Statistics Norway, 2011b). A majority of the inhabitants (58%) (Statistics Norway, 2011c) live in small towns ("tettsteder"), none of which have more than 12,000 inhabitants (Statistics Norway, 2011d), while the rest are rural dwellers. A somewhat lower proportion of people in the county have higher education, compared to the whole country (Statistics Norway, 2011e). The vast majority of the population is ethnically Norwegian, but it includes some Sámis and immigrants. Otherwise, the demographic composition of the county is fairly representative of Norway as a whole. More information on the HUNT 1 (Holmen et al., 1990), HUNT 2 (Holmen et al., 2003), and YoungHUNT (Holmen, 2000) studies can be found on the HUNT website www.ntnu.edu/hunt and elsewhere.

3.1.2. Samples

So far, three waves of HUNT have been conducted (HUNT 1: 1984-1986; HUNT 2: 1995-1997; HUNT 3: 2006-2008). The last two waves also include YoungHUNT. In the first wave (HUNT 1, T1, 1984-1986), all inhabitants aged 20 years or older were invited to a health examination and to answer two questionnaires (Q1 and Q2). In 1995-1997 (HUNT 2, T2), inhabitants aged 20 years or older were invited to a health examination and to complete two questionnaires (Q1 and Q2) that were more extensive than in the first wave. Parallel with this data collection, adolescents who were aged 13-19 and enrolled in school were invited to take part in YoungHUNT during school hours. Data from the third wave of HUNT (including YoungHUNT 3) (2006-2008) is not used in the present thesis. The questionnaires include items on a range of topics related to health and health behaviour, including alcohol use.

Table 1 summarises the number of invitees and respondents. Note that the specific analyses may have additional criteria for being included, for example, participating in both HUNT 1 and HUNT 2, being married et cetera. In total 47,291 persons participated in both HUNT 1 and HUNT 2 (first questionnaires from each study).

Table 1: Summary of sample sizes and response rates[1] to questionnaires.

	HUNT 1		HUNT 2		YoungHUNT		Mothers[2]		Fathers[2]	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Population	85,427	(100)	94,188	(100)	10,202	(100)	7,264	(100)	7,207	(100)
Invited	"	(100)	"	(100)	9,917	(97)	7,036	(97)	6,532	(91)
Q1	77,230	(90)	65,216	(69)	8,984	(88)	5,878	(81)	4,931	(68)
Q1 and Q2	63,943	(75)	55,313	(59)	n.a		5,057	(70)	3,991	(55)

Notes:

1. Response rates relative to the population.

2. Mothers and fathers of participating adolescents. Parents of siblings only counted once.

The first article includes four samples: i) everyone invited to HUNT 2, ii) everyone who both responded to HUNT 1 and were invited to HUNT 2, iii) all couples invited to HUNT 2, and iv) all parents invited to HUNT 2 with adolescent children participating in YoungHUNT. The second article includes all adolescents that participated in the YoungHUNT survey, together with their mothers and fathers. The third article includes couples that were married at the time HUNT 1 was conducted.

3.1.3. Registry data

The governmental agency Statistics Norway matched the data from the HUNT and YoungHUNT studies with data from population registries by using personal identification numbers. Statistics Norway provided data on sex, birth year, taxable income, highest achieved education, marital status for each year, urbanicity, and kinship. The kinship data allowed identifying who were related to whom (parents, children, spouses), which enabled matching of data between family members. Most of the variables were available for a number of years, for instance marital status and identification of husbands and wives were available for each year from 1974 to 2000.

3.2. MEASURES

The questionnaires contain measures of alcohol use, which is the primary predictor variable of all the analyses, and a range of psychological and behavioural outcomes and covariates. The questionnaires are found in appendix I-V.

3.2.1. Alcohol use (adults) (exposure)

The questionnaires contained various screening measures of alcohol use, related to amount of alcohol consumed, and to alcohol related problems. As these are not diagnostic instruments, an approach based on top consumption scores in combination with having experienced alcohol problems was applied to identify heavy drinkers. The alcohol measures were grouped into different categories to provide results for different drinking groups, and to account for non-linear associations. Abstainers were coded as a separate category since they in some respects are different from people with almost no consumption (Skogen et al., 2009).

HUNT 1 (1984-1986)

The alcohol consumption index in HUNT 1 included three questions related to alcohol use, all in the second questionnaire: "How often did you drink alcohol over the last 14 days?" (total abstainer, 0 times, 1-4 times, 5-10 times, 10 times or more), "If you drank alcohol during the past 14 days, did it make you feel intoxicated on any occasion?", (no, yes), and "Have there been periods in your life during which you have drunk excessively or at least a bit too much?" (no, not sure, yes). In the first paper, these were combined into a summative consumption index. In the third paper, we extracted one underlying component, which explained 55% of the variance in the responses. Previous studies on the same material have followed the same method (Hagen, Tambs, & Bjerkedal, 2002, 2006). People were divided into ordinal categories, from abstainers to heavy drinkers based on their score along this scale.

HUNT 2 (1995-1997)

Alcohol use among adults was measured somewhat differently at T2. In the first questionnaire of HUNT 2, the responders were first asked whether they were abstaining from alcohol. Non-abstainers were asked to report the number of drinking days during one regular month, and how many "glasses" of beer, wine and liquor they usually drank during a two-week period. Additionally, the second questionnaire included the CAGE alcohol screening questionnaire (Ewing, 1984), which is designed to screen for alcohol problems. The CAGE questionnaire

consists of four yes/no statements related to alcohol use and has been found to effectively identify alcohol dependence (Soderstrom et al., 1997).

In the first paper, the sum score of frequency and amount, together with the question on abstention, was used to categorize responders. CAGE was not used as that would require response to the second questionnaire, and we would like the non-responder analysis to have as few missing cases as possible. In the paper on school adjustment in children of alcohol abusers, it was more important to not have false positive cases of alcohol abuse. Thus, we used a combination of high sum-score and positive CAGE responses to classify people as alcohol abusers. Several in-between categories were used in both papers.

Recoding

For both T1 and T2, we recoded a few "impossible" responses to the alcohol questions. For example, people who both indicated that they were abstainers and that they were drinking alcohol were coded as not being abstainers. People who claimed that they had been drunk, but that they had not been drinking alcohol were recoded as having been drinking alcohol.

Reliability and stability

The polychoric correlation between alcohol use at T1 and T2 was 0.66 or 0.63, depending on definition (see paper 1 and 2). These numbers could be interpreted as measures of test-retest reliability if alcohol use was completely stable over 11 years. Considering that alcohol use also actually change, the reliability is likely to be considerably higher.

Seeing parents drunk

Adolescents participating in YoungHUNT were asked whether they had ever seen either of their parents drunk. The response options ranged from "never" to "a few times a week". The wording of this question did not permit distinguishing between whether it was the father, the mother, or both had been seen drunk. The item was used in paper 1 and 2.

3.2.2. Participation (adults) (outcome in paper 1)

We had data on whether each invitee had responded to each questionnaire. For the purpose of the first article, participation was defined as responding to the first questionnaire of HUNT 2.

3.2.3. School problems (adolescents) (outcome in paper 2)

School adjustment among adolescents was measured with 14 items related to various experiences in school. The measure has been used in several studies previously (Strandheim, Holmen, Coombes, & Bentzen, 2009; Størksen et al., 2006) and is intended to grasp a broad range of experiences with as few questions as possible. All items had four response options, ranging from "never" to "very often". An exploratory factor analysis revealed that a solution with four factors provided a good fit and was psychologically meaningful. The factors were named attention problems, satisfaction with academic results, conduct problems, and dissatisfaction with school in general. Sum scores for each factor were calculated. The Cronbach's alpha was 0.60 for the attention dimension, 0.59 or academic, 0.64 for conduct and 0.56 for dissatisfaction. Due to a highly skewed distribution, the conduct problem score was logarithmically transformed to obtain a closer to normal distribution.

3.2.4. Marital dissolution (adults) (outcome in paper 3)

The annual registry information on each person's marital status and the personal identification number of their spouse showed who were married, to whom they were married, whether they divorced or separated, and if so, when. Marriages were considered dissolved from the year the spouses were registered as separated or divorced.

3.2.5. Mental distress (among adults and adolescents)

An index of symptoms of anxiety and depression is an important covariate in all the papers.

Adult mental distress at T1

Mental distress among adults was measured at T1 with 12 items related to anxiety and depression. These items were weighted by coefficients calculated by Tambs and Moum (1993a) to optimise the correlation between a weighted sum of these items and the Hopkins Symptom Checklist-25 (SCL-25) (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Winokur, Winokur, Rickels, & Cox, 1984). The correlation between the indicator and SCL-25 was 0.82, and theta reliability was 0.83 (Tambs & Moum, 1993a). The measure has been used in a number of previous studies (e.g. Hildrum, Mykletun, Holmen, & Dahl, 2008; Idstad, Ask, & Tambs, 2010; Mykletun et al., 2011), and has been labelled the Anxiety and Depression Index (ADI-12) (Bjelland et al., 2008). In paper 1, the measure was ranked and divided into five percentile categories, while it was used as a linear covariate in paper 3.

Adult mental distress at T2

At T2, symptoms of anxiety and depression were measured by 13 out of 14 items from the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) and the seven-item CONOR Mental Health Index (Søgaard, Bjelland, & Tell, 2003). These were combined into a single measure, with nine anxiety items and eleven depression items. Cronbach's alpha was 0.89. HADS and CONOR has shown good psychometric properties (Bjelland, Dahl, Haug, & Neckelmann, 2002; Søgaard et al., 2003). The measure was divided into five percentile categories in paper 1, and dichotomised in paper 2.

Adolescent mental distress (YoungHUNT, T2)

Mental distress among adolescents was measured with SCL-5, which consists of five items measuring symptoms of anxiety and depression over the last two weeks. Four response options for each item ranged from "not at all" (1) to "extremely" (4). This short form measure correlates .92 (Tambs & Moum, 1993b) with the SCL-25, on which it is based (Winokur et al., 1984). Previous studies have concluded that the measure has satisfactory validity and reliability (Strand, Dalgard, Tambs, & Rognerud, 2003; Tambs & Moum, 1993b). Cronbach's alpha in the present study was 0.79. The measure was used in the second paper and dichotimized with a cut-off (mean $\geq$ 2) recommended by Strand et al. (2003).

3.2.6. Other covariates from the questionnaires

A range of other variables from the questionnaires and registries that may influence the relationships between alcohol use and the outcomes were used as covariates.

Several health variables were used in paper 1: subjective health at T1 and T2, measured with a single item; physical health, measured with a checklist of illnesses and disabilities at T1 and T2; whether the respondent had used health services during the last 12 months, measured at T1; and body mass index (BMI), calculated from height and weight measured at the health check at T1 and T2. Moreover, smoking was used in paper 1. Adults reported at T1 and T2 whether they were smoking on a daily basis, while adolescents reported on their parents at T2 (YoungHUNT) with 93% accuracy. Employment status at T1 was reported on the questionnaires and used in paper 1 and 3. For use in paper 3, adult respondents also indicated whether they were living with children, and how old these children were.

The adolescents' social network was measured with the number of close friends. This measure was used in paper 2. For use in the first paper, adolescent children of separated parents indicated with whom they were living.

Demographical data from the governmental registries, including birth year and sex, were used. For adults, taxable income and highest completed education were also obtained from registries. Municipalities were coded as urban or rural depending on their population size. Marital status was provided for each year, cohabitants were only registered if they had common children. Personal identification numbers of spouses, children, and parents were used to determine who were related to whom.

3.3 STATISTICAL ANALYSES

Various forms of multivariate regression analysis were applied to determine the empirical relationship between alcohol use and the outcome variables, i.e., participation, school adjustment, and marital dissolution. In addition, Pearson correlations and polychoric correlations were used.

The first paper had a dichotomous outcome, namely participation in the study. Determinants were analysed with binary logistic regression. Four such analyses were performed. The first sought predictors of non-participation in registry-based demography for everyone invited. The second investigated predictors for attrition between T1 and T2, using questionnaire data at T1. The third analysis used questionnaire data provided by spouses at T2. The fourth analysis was of questionnaire data from adolescent offspring at T2. Registry data and data from relatives gave information on those who never participated at all. Crude effects and effects adjusted for demographics are given as odds ratios (OR).

The second article had four dimensions of school adjustment as continuous outcomes, with both linear and categorical predictor variables. Multivariate analysis of covariance was conducted in order to investigate group differences on the four dimensions of school adjustment. Also, the parents who had several participating adolescents were entered in the data file once per child. To provide correct standard errors despite this statistical dependency between siblings, Generalized Estimating Equations was applied. Analyses were conducted to test whether the associations between alcohol use and school adjustment were mediated or confounded by demographics, divorce, parental mental distress, adolescent mental distress, seeing parents drunk, or adolescent social network. Crude and adjusted differences between groups were reported as fractions of standard deviations (Cohen's d).

The third paper had marital dissolution as a dichotomous outcome that could occur at any time during the observational period or not at all. This introduces a timing of the event. Thus, survival analyses (Cox proportional hazard models) were applied. Effects are given as hazards ratios (HR). Main effects of husband and wife alcohol use were investigated, together

with interaction effects between the spouses' alcohol use. Associations were sequentially adjusted for age, demographics, and mental distress.

All linear factors without natural measurement intervals were scaled such that high values indicated something negative, like poor adjustment or high levels of distress. Alcohol use was the main predictor in all analyses, and was used as a grouping variable. Light drinkers were specified as the reference group in all analyses. As one of the aims was to investigate different effects of alcohol use among men and women, sex was an important variable in all the analyses, either as covariate, or by splitting the analyses by sex. Also, the effects of husband drinking could be controlled for wife drinking, and vice versa.

Software

All analyses were run in SPSS version 17-19, in R 2.11.1-2.14.1, and in MPLUS.

3.4 MISSING DATA

Listwise deletion of incomplete cases reduces power and may bias the results. Therefore, three methods were applied to minimize the effects of missing data on the results: i) First, missing answers were filled in when there was a logic reason for the non-response. For example, abstainers who did not write anything in the rubrics for alcohol consumption were scored 0 on consumption. ii) Second, in paper 1 and 2, item non-response within scales was imputed using the expectation–maximization (EM) algorithm of SPSS if the measure was partially complete, and less than a certain proportion of the items were missing (75% i paper 1, 50% i paper 2). (See papers for details.) Paper 1 and 2 moreover had "missing" as a category on the alcohol variables. This was done in the family linked data sets to avoid excluding relatives of non-responders. These analyses therefore provide results for "relatives of non-responders" as well. iii) Multiple imputation (MI) was applied in the third article. MI produces multiple copies of the dataset, each with random variation around the maximum likelihood estimate. Unlike EM, MI does not deflate standard errors (Graham, 2009). In this case, however, the differences between results with and without MI were quite small, so the choice of imputation method did not have substantial impact on the results.

3.5 ETHICS

The data matching between times of measurement and family members was carried out by Statistics Norway using personal birth identity numbers assigned to every Norwegian citizen.

Before the data were returned to the researchers, the identity numbers were deleted, thus preventing identification of the participants.

All responders to HUNT 2 and YoungHUNT gave their written informed consent. At the time HUNT 1 study was conducted (1984-86), it was considered as a sufficient consent that the responder voluntarily met, answered questionnaires, and underwent health examination. Some years later all the traceable participants received a letter requesting a passive consent. The Norwegian Data Inspectorate and the Regional Ethics Committee (REC) have approved of the HUNT studies. REC additionally approved the non-response study.

4. MAIN FINDINGS

4.1. PAPER 1: NON-RESPONSE

The aim of the first paper (Torvik, Rognmo, & Tambs, 2011) was to investigate to what degree participants in HUNT 2 were different from non-participants with regard to alcohol use, mental health, and demographics. Non-response in HUNT 2 was predicted from demographical data and questionnaire data from HUNT 1, from data reported by spouses in HUNT 2 and from adolescent children in YoungHUNT. Heavy drinkers had elevated drop-out rates (OR = 1.27) from HUNT 1 to HUNT 2 compared to people who usually didn't drink. Alcohol use in spouses did not predict participation in HUNT 2. Independent reports by adolescent children of having seen their parents drunk was a strong predictor of non-participation at the crude level among, both men (OR=1.89) and women (1.73). In addition, there was an elevated probability of non-response in the other end of the alcohol scale: People who defined themselves as abstainers were considerably more likely to drop out between the waves than low consumers (OR = 1.64). Very high (top 1%) levels of mental distress (OR = 1.84) also predicted attrition. Likewise, demographic background and smoking were associated with participation. In general, being like the average person predicted participation, across variables. Although moderately associated with non-response, alcohol use and mental distress are probably not major causes, as controlling for other variables weakened the mentioned associations. Nevertheless, the patterns of non-response must be taken into consideration when interpreting results on exposed groups from health surveys.

4.2. PAPER 2: ADOLESCENT SCHOOL ADJUSTMENT

The second paper (Torvik, Rognmo, Ask, Roysamb, & Tambs, 2011) examined the association between drinking among parents and four areas of school adjustment in adolescents: attention problems, satisfaction with academic results, conduct problems, and satisfaction with school in general. School adjustment was reported by adolescents, while mothers and fathers independently reported about their drinking. Maternal and paternal alcohol abuse or at-risk drinking was associated with moderately higher scores on the impulse control-related dimensions attention (mothers: d = 0.35; fathers: d = 0.23) and conduct problems (mothers: d = 0.32; fathers: d = 0.24). Controlling for demographics reduced the effect sizes somewhat, but parental alcohol abuse was still an independent risk factor for attention and conduct problems. Drinking among mothers seemed to be more strongly related

to attention and conduct problems in our data, than drinking among fathers. Some of the risk associated with mothers' drinking is likely to be mediated by adolescent mental distress, as controlling for adolescent mental distress reduced the association between maternal abuse and attention problems ($\Delta d = -0.08$). The combination of alcohol abusing fathers and dissolved relationships was particularly predictive of attention problems (additional $d = 0.57$). Children of heavy drinking parents did not report elevated rates of dissatisfaction with school in general or with academic results. Due to high statistical power, such associations would most likely have been revealed, if they had a magnitude of any importance. Children of abstainers had fewer attention (mothers: $d = -0.11$), conduct (mothers: $d = -0.19$), and academic problems (mothers: $d = -0.12$; fathers: $d = -0.23$) than children of light drinkers. The adolescent self-report of having witnessed parental drunkenness was a stronger predictor of maladjustment than was parental alcohol report (attention: $d = 0.56$; conduct: $d = 0.62$). Internalizing mental distress among the parents did not confound the results.

4.3. PAPER 3: MARITAL DISSOLUTION

The third paper (Torvik, Røysamb, Gustavson, Idstad, & Tambs, 2012) investigated to what degree alcohol use among husbands and wives prospectively predicted marital dissolution, and how discordant and concordant drinking was associated with marital dissolution. Heavy drinking among men (HR = 1.35) and women (HR = 1.38) predicted future marital dissolution as main effects (numbers adjusted for demography). If only the husband was a heavy drinker the HR for divorce was 1.46, the HR was 2.27 if only the wife was a heavy drinker. Moreover, there were strong interaction effects, so that concordant abstainers (HR = 0.40) and concordant heavy drinkers (HR = 0.48) had lower risks of divorce compared to that expected from the combined main effects. A couple with two heavy drinkers (HR = 1.58) nevertheless had higher risk of divorce than did two light drinkers, while two abstainers had a lower divorce risk (HR = 0.49). While some of the effect sizes can be attributed to demographic differences and mental distress, alcohol use was still an important predictor of marital dissolution when controlling for these. This study thus support that both the level of alcohol use and compatibility in alcohol use is important regarding marital outcomes.

5. DISCUSSION

5.1. METHODOLOGICAL CONSIDERATIONS

To adequately interpret the results, it is necessary to understand the methodological strengths and weaknesses, which will here be discussed on a more general level than in the papers. These are to a large degree the same as in other population studies.

This discussion will mainly deal with four topics: generalizability, measurement, statistical assumptions and causality. These correspond roughly to four types of validity mentioned by Shadish, Cook, & Campbell (2002), namely external validity, construct validity, statistical conclusion validity and internal validity. Although other issues can pose threats to these kinds of validity, the topics mentioned here are considered most relevant for the present study. It must be noted that validity is not a property of methods, but of inferences (Shadish et al., 2002). This means that valid inferences can be drawn from any set of results; the validity pertains to the interpretations. Hopefully, the findings are still interesting when the right reservations have been taken.

5.1.1. Non-response and generalizability

As mentioned in the introduction, general population studies may include cases that are not in contact with the health services and thereby yield results with high generalizability. This requires alcohol abusers to be adequately represented in the sample. The HUNT study has fairly good response rates, some above 90%. However, high response rates do not necessarily equate to good representativeness, especially since it may be hard to reach the alcohol abusers. Although non-random non-response can bring along several kinds of problems (Shadish et al., 2002), non-response is here considered as primarily a threat to the external validity. If the non-response is systematic one cannot do a probabilistic generalization to an infinitely large population of the type from which the sample was drawn. Associations between variables may be misestimated (Miller & Wright, 1995). Moreover, fewer cases of abuse would lead to lower statistical power.

The results of the non-response analyses (paper 1) showed that both abstention and heavy drinking predicted non-response, although heavy drinking predicted non-participation quite modestly. Even among children who had seen their parents drunk several times a week, the majority of parents participated. Nevertheless, the problems with non-response could be larger among the most extreme cases, as there could be a linear or even exponentially-like

relationship between severity of the alcohol abuse and the probability of non-response. One might imagine that the alcohol abusers who participate are the ones who function best in every-day life. Since the distribution of alcohol use has a long and narrow tale to the right (high consumption), the extreme cases are likely to only constitute a small part of the entire heavy drinking group. Therefore, even if extremely troubled families are less likely to participate and might be better studied with clinical samples, this study is likely to yield estimates generalizable to the much larger group of people with alcohol problems found in society. It is also noteworthy that none of the demographic variables that may be indicative of success (education, income), were found to interact with heavy alcohol use regarding participation. Although prevalences are likely to be lowered by selective non-response, association estimates are more robust: One simulation study has shown that even high rates of non-response is only moderately detrimental to the estimation of associations between variables (Knudsen et al., 2010), while another simulation study found that association estimates were hardly affected even with high rates of selective non-response (Gustavson, von Soest, Karevold, & Røysamb, 2011).

In sum, it is reasonable to believe that the representativeness of the sample is fairly good, and probably more representative of alcohol abusers in general than are studies with clinical samples. The non-response study itself is also likely to be fairly representative, as it has good response rates at baseline, and among the adolescents reporting on their parents. Because of the good response rates, and the simulation studies, I believe that the association estimates in this thesis are quite accurate. If selective non-response among alcohol abusers in the present study affects association estimates at all, they are likely to be underestimated. When using percentile cut-offs, an underrepresentation of high-scoring individuals can lower the absolute cut-off value, decreasing the average group differences. Therefore, the correlates of alcohol abuse and heavy drinking studied in paper 2 and paper 3 may in reality be slightly larger.

The generalizability is also limited by the study taking place in a specific place at a specific time. The associations studied may be different across cultures. Although Nord-Trøndelag is likely to be fairly representative of Norway, as explained in the methods section, the results may be limited to societies with a Northern European drinking pattern.

5.1.2. Construct, measurement, and misclassification

Measurement can be defined as “the assignment of numbers to objects or events according to rules”, or more broadly as “the process of building models that represent the phenomena of

interest" (John & Benet-Martinez, 2000, p. 340). Construct validity is thus the validity of inferences about the constructs represented by the measures (Shadish et al., 2002), i.e. whether a measure reflects what it is intended to measure (John & Benet-Martinez, 2000). Reliability is necessary for construct validity, but not sufficient. So, what do the alcohol measures in HUNT reflect? This section will mainly be limited to the measurement of alcohol use. Similar issues pertain to the measurement of other variables used in this thesis.

The alcohol measures in HUNT don't corresponding to clinical DSM or ICD diagnoses. Obtaining reliable information for diagnostic purposes from a questionnaire is difficult and requires a lot if items. Interviews would be unpractical and too expensive, and some people would probably be reluctant to open up to an unknown interviewer. The method used is not perfect in terms of measurement, but it is efficiently administered to an entire population, which is also crucial for validity. The measures are relatively short and emphasize consumption more than problems. This may implicate that the highest scoring group might as well be termed "heavy drinkers" as "alcohol abusers". The term "alcohol abuse" was only used in paper 2, when measures of consumption were combined with the CAGE questionnaire that screens for alcohol related problems. Nevertheless, the two construct are likely to be highly related. Although this deviation from the gold standard may be a threat to the construct validity, I believe what we measure is sufficiently close to alcohol abuse or heavy drinking to be informative.

School adjustment and mental distress have also been measured with short symptom scales that do not precisely reflect diagnoses or other gold-standards. In these scales, there is a trade of between measuring a broad range of symptoms with few items and internal consistency. Otherwise, these measures may be criticised and defended with the same arguments as the measures of alcohol use.

A specific level of alcohol consumption might have to be interpreted differently among men and women. In general, women drink less than men, but also become more influenced than men by drinking the same amount of alcohol. These possible sources of measurement invariance (see Schmitt & Kuljanin, 2008) may be mitigated by the use of different cut-offs for men and women, and the measurement of problems experienced in relation to alcohol use – methods that have been applied in the papers. These efforts are likely to make the alcohol use of men and women placed into same-named drinking categories more comparable. One may fear mono-method bias by applying only one measure of alcohol abuse – so it is a strength that the results are mainly in line with those of previous research.

Further, the data mainly come from self-report questionnaires, and the study is therefore subject to limitations associated with this method. First, responders may misunderstand questions or remember incorrectly. Second, alcohol use is commonly underreported. A Finnish study with 97% response rate found that only one third of all alcohol consumption according to sales statistics was reported (Simpura, 1988). This is only a problem to the degree that underreporting does not occur at equal rates among all respondents, but changes the ranking among individuals so that the heaviest drinkers do not score at the top. In other words, if the amount of underreporting is proportional, that is, perfectly correlated with actual consumption, if for instance everybody report 50% of the true consumption, that would not affect the observed correlation between alcohol consumption and other measures. Neither would such proportional underreporting affect results based on alcohol use divided into categories. Even if the underreporting is not perfectly proportional to actual consumption, it is probably highly correlated with it. Abstainers have no consumption to underreport, most moderate consumers probably feel little need of underreporting, whereas heavy drinkers may have difficulties with accepting the full truth about their consumption. Out of the present data, it is not possible to know to what degree underreporting alter the ranking of consumption, but people are likely to provide reports of varying accuracy, leading to less-than-perfect ranking of individuals. On the other hand, the alcohol measures had high reliability. Third, people may be reluctant to answer personal questions, skip them, or respond incorrectly. Some people may even give mock answers, and the risk of unserious responses may be highest among adolescent reporting the worst outcomes: In a study on the topic, 2% of adolescents claimed that they had used a non-existing drug, and when these false positive responders were excluded, the occurrence of other low prevalence outcomes also decreased (Pape & Storvoll, 2006).

Moreover, response styles, such as mood-congruent memory responses may inflate correlations between items within a questionnaire because of correlated measurement error. Studies relying on retrospective self-reports, sometimes with highly subjective definitions of alcohol abuse, are especially vulnerable to such biases. Biased attention to the topic of the study could also lead participants to look for causes of problems that they have. In some cases there were higher correlations between measures within the same questionnaire than with similar measures in other questionnaires, such as with adolescent school adjustment and adolescent report of parental drinking versus parent reported drinking. This may be an example of such biases. It is therefore a major advantage of this study that we had data from different family members, independent reports from married men and women, and adolescent

children, and thereby avoided single responder bias. In some instances we even had family members' report on the behaviour of other family members. It is unlikely that error terms are correlated between variables in different questionnaires answered by different persons.

The above stated weaknesses related to construct and self-report may result in some misclassification, i.e., some people who are heavy drinkers being classified as not being heavy drinkers and vice versa. Since the measurement errors are unlikely to be correlated, this misclassification would result in underestimation of associations compared to the true associations in the population. Due to this, the results described in the papers may be somewhat underestimated compared to the true effects.

5.1.3. Statistical assumptions

The project tries to investigate people's minds by using statistical models. We can convert characteristics of people to numbers through measurement, but can we preserve the meaningfulness in the numbers through the statistical processing, so the results still tell us something about people? Shadish et al. (2002) define statistical conclusion validity as the validity of inferences about the covariation between variables. Since the sample is large, there's a good chance to find associations that actually exist, even if they are small. However, some of the assumptions of statistical tests may be violated, which could affect statistical estimates of all kinds (standard errors, p-values et cetera). One example of this is the assumption of independent observations, because violations of this assumption can increase the error rate (Moerbeek, 2004). While we controlled for the statistical dependency between siblings in paper 2, the observations were otherwise assumed to be independent, that is, we did not adjust for relationships such as cousins, nephews, friends, or being inhabitants in the same municipality. It is, however, not common to control for all thinkable relations in population studies, and most such dependencies are likely to be weak and ignorable.

Moreover, the HUNT data material is shared by many researchers. It is therefore a risk that the total sum of tests and the flexibility in application of the data material in effect lead to increased error rates on an aggregated level. Ioannidis (2005) points out that such error rates may be very high. Most of the results found in this thesis are, however, consistent with previous research. Future replications would nevertheless be valuable.

5.1.4. Causality and internal validity

Internal validity can be defined as the validity of inferences about whether the association between variables reflect a causal relationship (Shadish et al., 2002). Competing causal

models imply uncertainty about which model is right, and are as such threats to the internal validity. One can therefore argue for internal validity if alternative explanations have been considered and found implausible. None of the articles included in this thesis can draw absolutely firm conclusions about causality. A recurring problem with correlation studies is that they do not tell which variable is causing the other, or whether a third variable is causing both. Also, alcohol use has been studied epidemiologically as a risk factor. It is neither a sufficient nor a necessary cause for the outcomes studied, but at most a contributory cause.

Although we cannot conclude firmly on causality of the observed association, a range of covariates were included, most importantly demographics and mental distress. All effects prevailed when these covariates were controlled for. This implies that the associations are at least not simply due to confounding by these variables. Although it is a major strength of this study that we had a range of covariates available, it is possible to think of even more covariates that would have been relevant. Most prominent among these competing explanations are constructs such as personality, impulsivity and externalizing problems. Moreover, the risk, whether confounded by these unmeasured third factors or not, may in turn be genetically caused and transmitted. For example, the genetic covariation between alcohol problems and externalizing behaviour is well-known (Cerdá et al., 2010; Kendler, Aggen, Knudsen, et al., 2011), and may partly explain the results observed in paper 2. Statistically, it is not possible to distinguish between confounders and mediators, as the questionnaire measures were cross-sectional. As some of the variables that have been regarded primarily as potential confounders in reality could be mediators, controlling for many covariates may constitute statistical over-control. For example, alcohol use could affect employment and mental distress, which again could affect divorce and school adjustment. By having available a range of control variables, we nevertheless came closer to causality than studies without such.

In contrast to experiments with good causal control, this study is observational and takes place in a natural situation. This study can therefore be said to be strong on external validity, but weaker on internal validity, as it offers a poorer basis for drawing firm conclusions on causality.

5.2. INTERPRETATION OF THE RESULTS

5.2.1. School adjustment in children of alcohol abusers

The results of paper 1 made me confident that children of alcohol abusers could be adequately studied within the present sample. In paper 2, it was found that maternal and paternal alcohol abuse or at-risk drinking were associated with moderately higher levels of maladjustment on the impulse control-related dimensions "attention problems" and "conduct problems", even after controlling for the other parent's drinking, demography, and mental distress in parents and adolescents. These findings are in line with previous research linking children of parental alcohol abuse to attention and conduct problems and related diagnoses (Poon et al., 2000; Sood et al., 2001). This may be due to genetic components linking externalizing behaviour in parents and children, such as parental drinking and behavioural control in the offspring (Haber et al., 2005; Knopik et al., 2009). Also, social strains and environmental stress could overtax coping resources, leading to maladjustment (Dube et al., 2001; Haugland, 2005). However, heavy drinking in the parents did not predict dissatisfaction with school in general or with academic results. Mediation by adolescent mental distress was only likely for maternal abuse on conduct problems.

The genetic perspective is consistent with only finding effects on the impulse control related outcomes. From the environmental stress perspective a lack of effects on satisfaction could be explained by the school representing an escape from a troublesome home environment. From this perspective it is, however, unclear why effects are still seen on exactly attention and conduct problems, but not on the others factors. An adoption study found the link between parental alcohol abuse and behavioural disinhibition in offspring to be mainly genetically transmitted (King et al., 2009). Several other genetically informed studies have also found no or only small environmental transmission of behavioural problems (Haber et al., 2005; Slutske et al., 2008), although several pathways are possible (Knopik et al., 2009), including genotype-environment correlations and genotype-environment interactions (Horwitz & Neiderhiser, 2011). Drinking during pregnancy may also increase the risk of conduct problems (Kelly et al., 2012; Sood et al., 2001) and learning difficulties (Howell et al., 2006), however, the present study does not have data on this. It is hard to go further into causality without additional data.

The adolescent self-report of having witnessed parental drunkenness was more strongly related to maladjustment than was parental alcohol report. Interpreted at face value, it seemed to mediate or confound a non-trivial part of the association between parental alcohol

use and school adjustment, i.e., that being with intoxicated parents is what is really harmful. An alternative interpretation is that families where the parents find it appropriate to be drunk with their children have additional problems of various kinds. However, it may very well also be an example of the mood-congruent response consistency associated with only having a single responder, a bias that this multiple responder family study in general has aimed at avoiding. This implies that children and parents can have different impressions of the severity of the drinking, and while this question may tap into the subjective burden of having an alcohol abusing parent, it does not precisely measure consumption or stress. It may be stressful to have a parent who abuse alcohol, however, the degree to which this manifests as school problems is relatively small.

5.2.2. Drinking and marital dissolution

Married couples with high alcohol consumption were found to have a higher probability of divorcing or separating. This finding is in line with most other studies investigating selection out of marriage (Amato & Previti, 2003; Collins et al., 2007; Ostermann et al., 2005; Waldron et al., 2011). A likely interpretation is that alcohol use affects the ability to have good spousal relations and that alcohol abusers are less attractive to keep spouses (Collins et al., 2007; Kearns-Bodkin & Leonard, 2005; Marshal, 2003), however, it may also be that some other traits, such as impulsiveness, are responsible for both the drinking and events leading to divorce.

Rather than the effects of two heavy drinking spouses adding together to further increase the risk of divorce, similarity in alcohol use appeared to protect against divorce, whether it was concordant abstention or concordant heavy drinking. This finding replicate a previous study on divorce (Ostermann et al., 2005) and is consistent with studies on marital satisfaction and related outcomes (Homish & Leonard, 2007; Leadley et al., 2000; Mudar et al., 2001). However, unlike Ostermann et al. (2005), we found empirical support within the same study for a risk of divorce associated both with discordance in alcohol use and the level of alcohol use, possibly because our sample is larger.

The reason for this interaction between husbands' and wives' drinking patterns may be related to compatibility. Differences in alcohol use are likely to lead to stress and marital dissatisfaction. Concordant drinkers probably have similar attitudes towards alcohol, are parts of the same social circles and don't fight over alcohol use. Generally people prefer partners that are similar to themselves (Gonzaga et al., 2007). This implies that habits such as alcohol use should be investigated in couples rather than only within each individual.

An alternative explanation is that concordant heavy drinking harms relationships to a greater degree than that reflected by the divorce risk. Concordant heavy drinkers may settle for a lower level of satisfaction, while non-alcoholics married to a heavy drinker may have more to gain by dissolving the marriage than continuing a poor marriage (Amato & Hohmann-Marriott, 2007; Pinsof, 2002). Finally, it could be that couples who are already satisfied develop similar drinking behaviours.

5.2.3. Accumulation of risks

Interestingly, in paper 2 it was found that children who had alcohol abusing fathers with a dissolved relationship were particularly at risk for attention problems. This may be an example of the principle that an accumulation of risk factors is especially harmful (Foley et al., 2001; Ohannessian et al., 2004). On the other hand, many interaction effects were tested for, but few were found, so this may also be a type I error. For example, internalizing mental distress did not seem to moderate the effects of alcohol use. This notable lack of interaction effects may indicate that social problems do not only surface when the burdens reaches a certain threshold, but rather increases more linearly.

Nevertheless, if alcohol use leads to other risk factors, these may place additional strains on the family members. For example, divorce may have negative consequences for children (Lansford, 2009; Størksen et al., 2007, 2006), and since alcohol use can lead to divorce, children of alcohol abusers may face two strains instead of one. This should, however, be weighed against the potential risk associated with continued living in a conflicted family. Since alcohol abuse often brings along a number of social consequences, the total number of strains faced by the family may turn out high.

While concordant heavy drinkers did not have the highest risk of divorce, we do not know how concordant drinking affects the children. We did not find any interaction effects between mother's and father's drinking in paper 2, which may be due to the low number of families in which both parents had an alcohol problem. While a more harmonic relationship between the parents is likely to be good for the children, one may fear that the genetic risk is doubled among children of concordant heavy drinkers, and that they are at risk of having no parents who are able to provide adequate care.

5.2.4. Demography

Throughout all the papers, some of the effects of alcohol on the various outcomes appeared to be weakened when demographics were controlled for. This implies that a part of the problems

seen can be attributed to or caused by other social conditions. Controlling for demography is thus important to avoid incorrect, in this case inflated, effect sizes. Nevertheless it is important to note that alcohol use was an independent significant predictor in all the analyses, even after controlling for demographics.

That being said, it is also possible that persistent alcohol use could affect demographic conditions, such as employment status, income, and, as documented here: marital status. In that case, demographics mediate, rather than confound the effects of alcohol use. If that is the case, controlling for demographics may be an example of statistical over-control, with "true" effects of alcohol lying somewhere between crude and adjusted results. As the measures of these variables were cross-sectional, it is unfortunately not possible to test in this data material whether these variables act as confounders or mediators.

5.2.5. Mental distress and comorbid psychopathology

Across analyses comorbid internalizing mental distress did not seem to be very important as a confounder, mediator, or moderator. In the papers studying outcomes among adults (paper 1 and 3), mental distress can have confounded or mediated a part of the associations between alcohol and survey participation or divorce. The associations between parental alcohol abuse and school adjustment in their adolescent children seen in paper 2 appeared to be independent of parental mental distress. Adding that variable to the analysis did not substantially alter associations between parental drinking and school adjustment (at most 0.02 of a standard deviation).

This may seem contrary to studies finding that comorbid disorders are indeed important regarding outcomes for children (e.g. Jacob et al., 2001; Moss et al., 2001; Ohannessian et al., 2004). Two conditions may help explain this possible discrepancy: First a high number of untreated cases in the general population occur without severe comorbidity (Kessler, Chiu, Demler, Merikangas, & Walters, 2005), and in contrast to clinical studies and registry studies, they are likely to be included in the present study. Second, as mentioned in the limitations section, the HUNT studies did not include measures of externalizing psychopathology or antisocial personality, although these may be important to consider in the relationship between alcohol use and social functioning, both from a stress and from a genetic comorbidity perspective. If we were to turn back time and redesign the study, such measures, and measures of personality in general would have been valuable to include.

While internalizing mental problems may influence children and spouses in several ways, the findings in the present study imply that internalizing mental distress is not

particularly important in explaining the relationship between alcohol use and school adjustment and divorce. These two strains appear to operate fairly independent of each other regarding the familial consequences studied here.

5.2.6. Gender effects

In this thesis, unlike most other studies in the field, we have been able to study alcohol use in both parents of adolescents, and in both partners of a marriage. This has contributed towards studying the social consequences associated with alcohol abuse among women, and also to understand the interactions between alcohol use among family members.

Maternal drinking was particularly predictive of high attention and conduct problem scores in paper 2. In paper 3 discordant drinking among wives seemed to increase the risk of divorce more than discordant drinking among husbands, although compatibility also was important. Our results are consistent with previous findings on drinking among women (Chassin et al., 1999; Christoffersen & Soothill, 2003; Dube et al., 2001). There may be several reasons for the finding that heavy drinking among women appears to be more strongly associated with poor functioning of the family. Since women in general abuse alcohol less often than men, alcohol abuse among women may be considered more extreme when it occurs in women (Hill et al., 2010). It may reflect a more extreme genotype or a more extreme stressor, or it may be harder for women to combine alcohol abuse with society's expectations. The apparent heightened risk associated with maternal drinking compared to paternal drinking may also be explained by impairment of the primary caregiver role, commonly undertaken by the mother, or perhaps by drinking during pregnancy.

Moreover, adolescent mental distress was a strong predictor of attention problems, and it was also related to maternal drinking. It seemed to mediate a part of the association between maternal abuse and attention problems. This is a pathway that would typically be expected if stress is responsible. The same mechanism was not seen for paternal drinking. Hence, maternal drinking may be more stressful than paternal drinking, and at school this stress may primarily manifest itself as attention problems. Note, however, that most of the association does not follow this potential pathway.

Regarding adolescent gender, the parental drinking seemed to affect the risk for poor school adjustment equally for boys and girls. For outcomes such as depression and anxiety, alcohol abuse among the parent with the same sex as the offspring may have more serious consequences (Christensen & Bilenberg, 2000; Crawford, Cohen, Midlarsky, & Brook, 2001). There does not seem to be any strong moderating effect of offspring gender on the link

between parental drinking and school adjustment. If such effects were considerable, the present study has such a large sample that they would most likely have been detected.

5.2.7. Abstainers

The use of ordinal alcohol variables enabled us to get separate results for abstainers. In all the articles, we found that abstainers were different from people with a very low consumption: Compared to light drinkers, they were more likely to be non-responders, while their children had fewer attention, conduct, and academic problems, and concordant abstainers had a strongly reduced risk of divorce. This is in line with, and adds to, research finding that abstainers are different from people who usually do not drink in several respects. We have demonstrated that this is also true for other outcomes, even among their family members.

The alcohol use in itself is unlikely to cause the differences, as the amount of alcohol consumed among light drinkers is too small to constitute a strain. It seems very unlikely that drinking a few units of alcohol on rare occasions should affect children and endanger marital relationships. These differences are therefore best explained by selection into the abstention category, i.e., the conditions that lead someone to deciding to be an abstainer, like personality or religiousness. One study found that abstainers were more introverted than light drinkers (Walton & Roberts, 2004), which would be in line with the increased risk for anxiety and depression (Skogen et al., 2009) and with smaller social networks seen among them compared to people who participate in social drinking (Graham, 1998). Although introverts are at risk for internalizing problems, introversion may help explain why their children have less conduct problems at school. Also, the lowered risk of divorce among abstainers can be related to more participation in religious groups (Michalak et al., 2007; Spein, Melhus, Kristiansen, & Kvernmo, 2011), who are likely to oppose divorce.

Moreover, some of the abstainers may be sick-quitters, who share traits with the heavy drinkers. While some precautions have been taken to exclude these from the abstention category, it cannot be excluded that some of them are present. In any case, sick-quitters are likely to only be a small fraction of the abstention group.

5.2.8. Risk at the population level

There were clear associations between alcohol abuse and the studied outcomes. These associations may be interesting theoretically and in a public health perspective. However, they are of modest magnitude, and alcohol abuse only explains a relatively small part of the variation in willingness to participate in surveys, in school adjustment, and in liability to

divorce. This is in line with previous research (Essex et al., 2006). Obviously, many other factors are important for these outcomes as well. This means that many relatives of alcohol abusers do not experience serious problems, while other people go through these difficulties without having alcohol abusing relatives.

As this study is likely to have achieved high generalizability to the general population, it may be relevant at the public health level. There seems to be a dose-response trend, as the at-risk groups consistently scored between abusers and light drinkers. Although the effect sizes are the highest in the abuse and heavy drinking groups, these groups are smaller than the group of people with somewhat elevated alcohol consumption. In line with the prevention paradox (Rose, 1981; Rossow & Romelsjö, 2006) one can expect more of the total burden associated with alcohol use to be among the relatively large group of people who drink a bit too much rather than among the relatively few extreme cases. From a public health perspective, moderate cases of heavy drinking may therefore be more interesting than extreme cases.

5.3. IMPLICATIONS AND CONCLUSION

5.3.1. Implications

This study has several implications. By using a general population study with response from multiple family members, we gained a more complete understanding of alcohol use generally, and not limited to the sub-group who seeks treatment. Among other things, it proved useful to investigate alcohol use across the entire drinking range, from abstainers to abusers, and to have results for each category. Methodologically, it was also important to have data provided by separate family members. Moreover, the results of the non-response study may prove useful for other studies on alcohol use, mental health, or for population studies in general, all such studies need to know what causes non-response to interpret their results properly.

As the results of this thesis fills a knowledge gap about alcohol abusers not in treatment, it may be useful for health authorities in understanding alcohol use on a public health level, and relevant as background information for the therapists and the educational system. Paper 3 underlines the importance of not only seeing heavy drinking as a problem located within a person, but also as a process that relates to that person's surroundings. Social consequences of alcohol abuse are better understood if one takes into consideration the other family members. A more complete understanding of alcohol abuse may lead to better priorities in treatment and to prevention of adverse outcomes.

5.3.2. Future research

Alcohol abuse is most common among men, and alcohol abuse among men has been most extensively studies previously. The heightened risk associated with female drinking compared to male drinking may be worrying considered that alcohol consumption may be on the rise among young women (Vedøy & Skretting, 2009). If this trend does not change, alcohol abuse among females may constitute a larger problem in the future than currently. Future research may therefore benefit from paying special attention to monitor these trends, and to better understand the social consequences of alcohol abuse among women in general and mothers in particular.

One will probably benefit from studying the alcohol abuser in relation to other family members and their surroundings, rather than studying the alcohol abuser in isolation. General population health studies with kinship information are well suited for doing this kind of research. More studies on concordant drinkers would be welcome.

This study has shown that the heightened risk of problems seen among the families of alcohol abusers were not accounted for by increased rates of mental distress, or by demographic differences. However, the lack of significant moderation effects means that this study has failed to distinguish between families of alcohol abusers with good and poor outcomes, and can therefore not explains why drinking seems to have large social consequences in some cases, but not in other cases. Either, the effects of alcohol abuse on the family is rather non-specific, with each potential covariate only explaining a small part of the social consequences, or this study has included the wrong covariates. Surely, future research would benefit from including covariates such as externalizing psychopathology, measures of neglect, marital interaction, personality, and more. There may also be differences between different classes of alcohol abusers who have different motivation for their drinking.

Also, causal mechanisms and social processes need more investigation, preferably with longitudinal design, and with family studies with genetically informative designs. Follow-up studies may be informative in determining whether effects are short-term or long-lasting – such studies may be based on newer waves of the HUNT study (III or IV), or registry data. This may be interesting both with regard to children of alcohol abusers, and to see how divorced and continuously married heavy drinkers fare with respect to drinking and quality of life over time.

5.3.3. Concluding remarks

In spite of the mentioned limitations, the use of a general population health study with response from several family members for the investigation of families of alcohol abusers provided new insights. The large sample size provided good estimates of associations between alcohol use and the outcomes.

Albeit there was some selective non-response related to alcohol use, the effects were of a modest magnitude. This makes me believe that the method is suited for investigating familial consequences of alcohol use, with the considerable advantages this representative sample entails. Besides non-response, the families in which alcohol abuse took place were found to be at risk for both the studied outcomes. Adolescent children of alcohol abusers were found to have more impulse control related problems at school, and these associations were not fully mediated by adolescent mental distress. However, they were just as likely to be satisfied with their results at school and with school in general. Heavy drinkers had a higher risk of becoming divorced over the next years, which may be regarded as selection out of marriage. Moreover, compatibility in alcohol use appeared to protect against divorce. This underlines the importance of considering multiple family members, and not only the drinker in isolation. Alcohol use was an independent predictor of the mentioned outcomes, even after controlling for demographics and mental distress.

In conclusion, there seems to be clear but mainly moderate effects of alcohol abuse on children and marital relationships. By and large, in the general population alcohol use is associated with a modest risk of social consequences on the studied outcomes. Due to the commonness, the amount of damage may nevertheless be large on the societal level. Although the risk is increased, most family members of heavy drinkers seem to fare well.

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PAPER 1

Torvik, F. A., Rognmo, K., & Tambs, K. (2012). Alcohol use and mental distress as predictors of non-response in a general population health survey: the HUNT study. *Social Psychiatry and Psychiatric Epidemiology, 47*, 805-816. doi:10.1007/s00127-011-0387-3

Soc Psychiatry Psychiatr Epidemiol (2012) 47:805–816
DOI 10.1007/s00127-011-0387-3

ORIGINAL PAPER

Alcohol use and mental distress as predictors of non-response in a general population health survey: the HUNT study

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Received: 16 August 2010 / Accepted: 18 April 2011 / Published online: 5 May 2011

Abstract
Purpose To investigate to what degree alcohol use and mental distress are associated with non-response in a population-based health study.
Methods From 1995 to 1997, 91,488 persons were invited to take part in a health study at Nord-Trøndelag, Norway, and the response rate was 69.2%. Demographics were available for everyone. Survey answers from a previous survey were available for most of the participants and a majority of non-participants. In addition, the survey responses from spouses and children of the invitees were used to predict participation in the aforementioned study. Crude and adjusted ORs for a number of predictors, among these alcohol consumption and mental distress, are reported.
Results Both heavy drinkers (OR = 1.27) and abstainers (OR = 1.64) had a higher probability of dropping out in comparison to people who usually do not drink. High levels of mental distress (OR = 1.84) also predicted attrition.
Conclusion Alcohol use and mental distress are moderately associated with non-response, though probably not a major cause, as controlling for other variables weakened the associations. Nevertheless, the moderate but clear underrepresentation at the crude level of people with high alcohol consumption, abstainers and people with poor mental health should be taken into consideration when interpreting results from health surveys.

Keywords Non-response · Non-participation · Attrition · Alcohol · Mental distress

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Introduction

Using general population health surveys to study alcohol abuse and mental health problems makes it possible to investigate cases that would normally not be included in clinical samples. However, some of the people of interest may not respond. While clinical studies can be criticised for overestimating effect sizes by selecting people with the most severe symptoms, population studies can underestimate effects if important target groups do not respond. Topic-related non-response may threaten external validity by providing non-generalisable prevalence estimates and variable associations [1, 2]. Neither a high response rate [3] nor a demographical weighting of the sample [4] ensure representativeness. To know to what extent results from population studies of alcohol abuse and mental distress are generalisable, it is crucial to investigate whether individuals with such problems are adequately represented.

Alcohol use and non-response

The reported amount of alcohol consumed is consistently found to be considerably lower in population studies than what we know to be true from official sales statistics [5, 6]. While partly a result of underreporting, we do not know to what degree non-response among heavy consumers causes the discrepancy between results from self-report and sale statistics, as seemingly contradictory results have been found on the association between alcohol consumption and participation [2, 4, 7]. There are, however, systematic methodological differences in the studies having investigated non-response.

If one presupposes a "continuum of resistance" to participation, one can assume that reluctant responders, as a point along this continuum, are more similar to

non-responders than are obliging responders [8] and that characteristics of reluctant responders are accentuated in non-responders. An underrepresentation of people with high alcohol consumption or alcohol-related problems has been found using several methods presupposing a continuum of resistance. When looking at attrition from baseline to follow-up, there was a higher dropout rate among heavy drinkers [9–15]. When comparing early and late responders, late responders were found to consume more alcohol [7, 16, 17], except in one study [5]. Family members of responders and non-responders have been compared and it has been found that less cooperative families were more likely to have alcohol-related problems [18]. Since alcohol consumption is correlated within families, data from family members can act as proxies for an invited person. The studies, which found an underrepresentation of heavy drinkers, either did not find or did not investigate whether abstainers or low consumers were also underrepresented. While research on attrition from baseline to follow-ups provides clear results, it is less evident who participated in the first place, as linear extrapolation to non-responders may not always be correct [5]. In addition, using registries, it has been found that people who are hospitalised or receiving a disability pension due to substance related disorders are less likely to respond to surveys [19, 20]. These people, however, represent extremes and may misuse of other substances than alcohol.

When approaching random samples of persons who did not actually respond to a survey, the opposite results were found. Abstainers, and not heavy drinkers, were significantly overrepresented among non-responders, or non-responders drank less than responders did [4, 6, 21, 22]. These studies have some methodological limitations. The response rates were low (from 35 to 54%), and the data collection changed from questionnaires in the original studies to interviews, thus possibly affecting the validity of self-report data on sensitive topics such as alcohol consumption [23, 24].

Mental distress and non-response

Quite a few studies find that symptoms of mental health problems are associated with non-response. In clinical trials, the risk of drop-out is higher than average for patients with the most severe symptoms of mental problems [13, 25]. In population health studies, people with mental health problems at baseline are also less likely to respond to follow-up surveys [10, 12, 14, 26, 27]. Drop-out seems to be associated with mortality and a failure to locate the invitees, rather than unwillingness to participate [10, 27]. Distinguishing between early and late responders, one study [16] found that late responders use more psychopharmaceuticals, while another [28] did not find any association between mental health and late response. Using reports from family members as proxies for the invitees, it has been found that less cooperating families score higher on "anxious depression" and neuroticism [18]. Linking registry data from hospital discharges to people invited to participate in a health study, it was found that non-responders were more likely to have had a psychiatric diagnosis [20, 29].

The opposite result was found among non-participants (80% response rate), who were much less likely to have social phobias [30]. Nevertheless, like other follow-ups of initial non-responders, the data collection method was changed from postal questionnaire to telephone interview. While some type of underrepresentation of mental health problems seems probable, it is unclear how less severe levels of mental distress are related to non-response. It is also unclear as to what degree mental distress uniquely contributes to non-response when controlling for potential confounder variables such as alcohol use, health and demography, all of which are related to mental distress.

Demographical and health variables related to non-response

Other traits commonly found to predict non-participation include smoking [11, 15, 22, 31, 32], high body mass [31, 33], unemployment [10, 16, 31], poor subjective health [11, 31] and health problems [16, 33–36]. It has repeatedly been found that non-responders are more often male [12, 14, 29, 33, 35–38], young [10, 11, 26, 29, 36] or old [33, 37, 39], unmarried or divorced [7, 10, 11, 15, 16, 29, 36], live in urban areas [10] and have a low income [7, 10, 15, 36], education [7, 16, 29, 36, 39, 40] and socioeconomic status [26, 31, 35]. Some studies indicate that people in the upper end of the educational and income range are also somewhat underrepresented [12, 15, 36]. Using the same dataset as the present study, it has been found that non-participation was associated with being male and either young or elderly [37]. In general, results on demographic variables are relatively reliable since such data are often available from public registries including all invited subjects.

Aims of the study

The aim of the present study is to investigate to what degree general population studies are representative with regard to alcohol use and mental distress. The Nord-Trøndelag Health Study (HUNT) is suitable for investigating the role of these variables as predictors of non-response. It contains large samples with complete demographical registry data, prospective data and kinship data. This permits the examination of alcohol use and mental distress at the same time, while controlling for demographics and health-related variables.

Supplementary analyses of data from family members can yield some information about those who have never participated. For those who have had a participating spouse, the spouse's data will be used to predict participation. In addition, adolescents were asked questions concerning their parents' behaviour, and their answers will be used to predict their mother's and father's participation. With categorical rather than linear predictor variables, non-participation on both ends of the alcohol use and mental distress scales can be elucidated.

Methods

Sample and design

From 1984 to 1986 and from 1995 to 1997, all inhabitants in the Norwegian county of Nord-Trøndelag aged 20 years or older were invited to participate in the HUNT study. With each wave, the participants went through a physical examination and completed two questionnaires. The participants then received a letter containing their results, and if necessary, a referral to a doctor.

Main sample

In the second wave (T2, 1995–1997), 94,188 persons (average age 48.5 years; 50.2% women) were invited to take part in the health study, with 65,216 persons (69.2%) responding to the first questionnaire. The second questionnaire was not used in the present study.

Drop-out sample

Data from T1 were used to predict non-participation at T2 among persons who responded to both questionnaires at T1 and who were invited at T2. People invited at T2, but not at T1 were either too young or lived outside the county at that time. People invited at T1, but not at T2 included those who in the meantime between T1 and T2 migrated out of the county or passed away. Thus, except for a relatively few persons who died during the weeks from the invitation was prepared to the day of appointment, mortality is not a cause of non-participation. Of the persons invited at T2, 64,749 (68.7%) had also been invited at T1, out of which 60,079 (92.8%) returned the first questionnaire at T1 and 50,349 (77.8%) completed the second questionnaire at T1. Of these, 48,334 (96.0%) had valid data after imputation (see below) and were included in the prediction of participation at T2. Of the T2 non-responders eligible for T1 participation, 63% returned the second questionnaire at T1. Responses at both T1 and T2 from 40,548 persons were used to calculate test–retest stability of the measures.

Spouse sample

Valid responses from spouses at T2 were used to predict the invitees' participation at T2, and cohabitants with children were included in this sample. A total of 53,835 persons (57.2% of the total sample) invited to T2 had a spouse who was also invited to participate in the study. Of the invited spouses, 42,365 (78.7%) participated, of which 40,301 (95.1%) had valid data on all measures after imputation. Of the non-respondents with an invited spouse, the spouse participated in 43% of the cases. For the 37,485 couples in which both spouses participated, responses were used to calculate concordance.

Adolescent sample

At T2, adolescents aged 13 to 19 years old living in the county were also invited to participate in a similar health study called YoungHUNT. Out of 9,917 adolescents invited, 8,984 (90.6%) responded to the questionnaire. As data were collected during school hours, this sample is thought to be fairly representative of all adolescents within the county. Valid responses were used to predict participation among the adolescents' parents, with only one child per parent being included. If a parent had more than one responding child, the oldest with valid data on exposure to parental alcohol use was chosen. This resulted in a final sample of 6,586 mothers and 6,532 fathers with participating children, of which 6,382 (97%) mothers and 6,346 (97%) fathers were included in for the non-response analyses. In the remaining 3% of the cases, the adolescents had provided incomplete information.

More on HUNT

Details regarding the methods in the HUNT-1 (T1) [41], HUNT-2 (T2) [37] and YoungHUNT [42] studies have been described elsewhere, and are also described at the HUNT website at http://www.ntnu.no/hunt. The data analysed for this article were slightly different from the data analysed by Holmen and colleagues [37], who removed 1,258 persons who died or moved between the time of the invitation and the health check from the analysis, while the authors of the present article did not have such information. Additionally, 724 persons, primarily above 80 years of age, who were registered as participants in that analysis only provided blood samples and are not considered participants in the present study.

Measures

Demographics

The governmental statistics agency, Statistics Norway, provided demographic data on sex, age, marital status, income, education and urbanicity for all persons invited. For the purposes of this article, age was divided into five categories. Divorce and separation were recoded into the same marital status category, while cohabitants with children were coded as a separate category. Cohabitants without children could not be identified through the public registries. Income was categorised as none, low, medium or high, while education was ordinally scored into five levels. People living in municipalities with township status (all with a population ranging from 10,000 to 20,000) were coded as living in towns. There are no larger cities in the county.

Alcohol

The questionnaires included various alcohol measures. T1 included three questions on alcohol use: drinking frequency, whether one had been drunk during the past 2 weeks, and whether one had been drinking too much in periods of life. These were combined into a summative five point consumption index [total abstainers (9.9%), no reported drinking over the past two weeks (42.0%), some drinking (37.2%), moderate drinking (8.1%) and heavy drinking (2.9%)]. T2 alcohol consumption was measured with a self-report on the number of units drunk during the past two weeks and the number of days drinking in a month. Together with a question on alcohol abstention, five groups were formed [total abstainers (11.2%), no drinking over the past 2 weeks (24.4%), some drinking (46.2%), moderate drinking (men: 12–21 points on the total of units and drinking days, women: 8–14 points; 13.8%) and heavy drinking (4.5%)]. Adolescents participating in Young-HUNT were asked how often they had seen either of their parents drunk, with answers ranging from "never" to "a few times a week". The wording of this question did not permit distinguishing between fathers and mothers.

Mental distress

Mental distress was measured at T1 with 12 items related to life satisfaction and mental distress. This measure has been used by Tambs and Moum [43], who regressed these items on the Hopkins Symptom Checklist (SCL-25) [44] in another data material, using regression coefficients to optimise a weighting of the items in a summative indicator. The correlation between the indicator and SCL-25 was 0.82, and the theta reliability was 0.83 [43]. T2 included two indicators of mental distress (Hospital Anxiety and Depression Scale [45] and CONOR Mental Health Index [46]), which were combined into a single measure ($\alpha = 0.89$). Both the T1 and T2 measures were ranked and divided into the following five percentile categories: low (25%), average (40%), elevated (25%), high (9%) and very high (1%) levels of mental distress.

Health-related measures

Number of illnesses and disabilities was used as an indicator of physical health. A checklist at T1 included mobility impairment, impaired vision, impaired hearing, bodily impairments, diabetes, myocardial infarction, angina pectoris, stroke and cerebral haemorrhage. At T2, the checklist was expanded with epilepsy, cancer and "other prolonged illness". The respondents were categorised as having none, one, or two or more illnesses or disabilities, whereas the use of health services was measured at T1 with questions on whether the respondent had been to a doctor during the past 12 months. Subjective health was measured at T1 and T2 with a single item ("How is your health at the moment?"), with four response categories ranging from "poor" to "very good".

Lifestyle-related measures

Body mass index (BMI) was calculated from height and weight measured at the health check at T1 and T2, and was categorised into three groups: normal weight (BMI < 25, including 1.2% with BMI < 18.5), overweight ($25 <$ BMI < 30) and obese (BMI > 30). At T1 and T2, adults were asked whether they were smoking on a daily basis, while adolescents were asked whether their mother and/or their father were smoking at home. Employment status was reported by target persons participating in T1, with four possible answers: working full time, working part time, working at home and not working. Adolescents were asked whether their parents were separated and, if so, with whom they were living.

Missing data

In order to avoid excluding persons with a certain proportion of missing data from the analyses, missing data were imputed instrument by instrument, using the maximum likelihood procedure in PASW Statistics 17.0 (formerly known as SPSS) if no more than 75% of the values were missing for the instrument. For the T1 alcohol measure, 1.1% of all item scores used were imputed, and 2.6% of the values used for the T1 mental distress measure were imputed. A total of 894 (1.8%) persons did not have enough valid items for the alcohol measure to be

calculated, while 515 (1.0%) were left with missing instrument scores on mental distress. For the spouses at T2, 3.0% of the values used to calculate the alcohol measure and 4.1% of the items in the mental distress measure were imputed, with 1,424 (3.3%) and 812 (1.9%) being left with missing instrument scores, respectively. There were no missing data on demographical variables and no imputation was done on adolescent data, as only single item measures were used.

Statistical analyses

Participation is defined as returning the first questionnaire in HUNT-2. The predictors for non-response to this questionnaire were analysed using binary logistic regression. Four such analyses were performed, one for registry-based demography and one for each of the questionnaires completed by the target person at T1, their spouses at T2 and their adolescent offspring at T2. It is not meaningful to combine data from all sources to predict participation since the group with complete data would only cover a fraction of the variance in willingness to participate. By regressing participation on one variable at a time, crude odds ratios for participation were obtained. Adjusted odds ratios were obtained by entering all predictor variables from a questionnaire together with demography in the same step.

Analysis 1: demography

First, complete demographic data from public population registries were used to predict non-participation for everyone invited at T2.

Analysis 2: drop-out from T1 to T2

Second, prospective questionnaire answers from T1 were used to predict non-response at T2. Non-response was predicted from alcohol use, mental distress, subjective health, physical health, use of health services, body mass index, smoking habits and employment. The degree of stability of participation for a person from T1 to T2 was assessed using logistic regression and tetrachoric correlations. The stability of other variables was calculated using Pearson and polychoric correlations.

Analysis 3: spouses

Third, the spouses' answers at T2 were used to predict participation at T2 for everyone invited to T2 who had a participating spouse. For variables that are highly correlated between family members, self-reported family data can be used as proxies to the invited person [18]. Non-response was predicted from the spouses' alcohol use, mental distress, smoking habits and physical health. To avoid statistical dependency between the observations, the analyses were run separately for husbands and wives. The degree of dependence of participation between partners was calculated using logistic regression and tetrachoric correlation. Spousal resemblance for other variables was calculated using Pearson and polychoric correlations.

Analysis 4: adolescent children

Finally, the answers of adolescent offspring reporting directly on their parents' display of alcohol use, smoking or living situation were used to predict non-response among invited parents. The analyses were run separately for mothers and fathers.

Interaction effects

All potential two-way interaction effects involving alcohol use or mental health were tested. The interaction terms were entered one at a time, together with the other covariates. To limit the family-wise error rate, α was set at 0.01 for the interaction effects.

Software

PASW Statistics 17.0 by SPSS Inc. was used for all analyses, except for polychoric and tetrachoric correlations, which were calculated using Polycorr 1.1 [47].

Ethics

The data matching between times of measurement and family members was carried out by Statistics Norway using personal birth identity numbers assigned to every Norwegian citizen. Before the data were returned to the researchers, the identity number was deleted, thus preventing identification of the participants. The Norwegian Data Inspectorate and the Regional Ethics Committee (REC) have approved the HUNT study, and REC approved the present non-response study. Participants gave their written informed consent.

Results

Analysis 1: demographics

The probability of non-response at T2 for everyone invited was regressed on sex, age, marital status, income, education and urbanicity in a logistic model, with the results shown in Table 1. High odds ratios (OR) show a high likelihood of non-response.

Table 1 Demographical predictors of non-response among people invited at T2

Variables	*n*	OR_{crude}	$OR_{adj.}$	95% $CI_{adj.}$
Sex				
Female	47,311	1	1	Ref.
Male	46,877	1.46	1.61	1.56–1.67
p for trend		<.001	<.001	
Age (years)				
20–29	18,189	1	1	Ref.
30–44	25,817	0.39	0.55	0.52–0.58
45–59	22,699	0.24	0.32	0.30–0.34
60-74	16,255	0.19	0.15	0.14–0.16
Over 75	11,228	0.68	0.41	0.38–0.44
p for trend		<.001	<.001	
Marital status				
Married	49,288	1	1	Ref.
Never married	23,303	3.69	2.03	1.95–2.13
Widow	8,686	2.10	1.63	1.53–1.73
Divorced or separated	6,135	1.98	2.03	1.92–2.16
Cohabitants w/children	6,776	2.01	1.41	1.32–1.50
p for trend		<.001	<.001	
Income				
None	26,129	1	1	Ref.
Low	20,425	1.05	0.64	0.60–0.67
Medium	34,024	0.64	0.47	0.45–0.50
High	13,610	0.69	0.56	0.52–0.60
p for trend		<.001	<.001	
Education				
Primary	25,342	1	1	Ref.
Secondary, lower	23,749	0.71	0.69	0.66–0.72
Secondary, higher	34,178	0.99	0.59	0.56–0.62
Higher, short	8,283	0.90	0.58	0.55–0.62
Higher, long	2,645	1.19	0.86	0.78–0.94
p for trend		<.001	<.001	
Urbanicity				
Rural	34,068	1	1	Ref.
Town	60,120	1.11	1.12	1.09–1.16
p for trend		<.001	<.001	

Crude and adjusted odds ratios

Men were more likely than women to be non-participants and this association was stronger when other demographic variables were controlled. The age of the invitees spanned from 19 to 101 years, and was curvilinearly associated with non-response rates. The probability of non-response was highest among people in their 20s and dropped significantly between each age group until the age of 60–74 years. Among the elderly, non-response increased again, and crude and adjusted results revealed the same pattern. When compared to married persons, individuals within all other marital status groups were more likely to be non-responders. Adjusted results showed that those who had never married or were divorced were equally unlikely to respond. Cohabitants with children were more likely to be non-responders than married persons. Income was also related to participation. Adjusted probabilities had a reverse J-shape, with the highest probability of non-response in the no income group and the lowest probability of non-response in the medium income group. Education was also non-linearly associated with likelihood of participation. Adjusted risk of non-response decreased from the lowest educational group to the second highest and then increased. Unadjusted results showed that people in the highest educational group were most likely to be non-responders, while the least educated had the highest non-response after adjusting for the other variables. Urbanicity affected participation, with people living in towns being more likely to not respond than those living outside towns.

Analysis 2: drop-out from T1 to T2

Among those invited to both surveys, subjects responding to both questionnaires at T1 were less likely to not respond at T2, with an odds ratio of 0.37 (CI 0.36–0.39), which corresponds to a tetrachoric correlation of 0.34 (CI 0.32–0.35). Results from the prediction of non-response at T2 by questionnaire data from T1 are shown in Table 2. Adjusted OR are adjusted for demographics and the remaining T1 variables.

Although two different measures were used, the stability of alcohol consumption between T1 and T2 was strong, with Pearson $r = 0.50$ and polychoric $r = 0.66$. There was a curvilinear association between alcohol use at T1 and response at T2, with abstainers being the most likely to drop out. People with a medium or high consumption also had an elevated risk of dropping out, while people with a low consumption were significantly less likely to drop out than do people with no consumption. The unadjusted non-response rate at T2 was 16.1% among persons consuming small amounts of alcohol at T1, compared to 27.9% among abstainers and 22.9% among heavy drinkers. When these results were adjusted for demographics and the other variables in this analysis, the same pattern remained, albeit at a somewhat reduced magnitude. Nonetheless, both extremes still predicted non-response compared to low consumption.

The categorised measures of mental distress showed a lower correlation between T1 and T2 than did alcohol consumption, with Pearson $r = 0.44$ and polychoric $r = 0.49$. Unadjusted, mental distress at T1 was curvilinearly associated with non-response at T2, and people with very high levels of mental distress were most likely to drop out. People with moderate levels of mental distress were a little less likely to drop out than do people with the lowest

Table 2 Answers at T1 as predictors for non-response at T2, among T1 responders re-invited at T2

Variables	*n*	OR_{crude}	OR_{adj}	95% $CI_{adj.}$
Alcohol consumption, T1				
Abstainer	4,782	1.64	1.41	1.30–1.52
No	20,285	1	1	Ref.
Some	17,959	0.83	0.96	0.90–1.02
Medium	3,900	1.16	1.10	1.00–1.21
High	1,408	1.27	1.13	0.98–1.30
p for trend		<.001	<.001	
Mental distress, T1				
Low	12,126	1	1	Ref.
Average	19,417	0.92	0.94	0.88–1.00
Elevated	12,034	0.97	0.94	0.88–1.01
High	4,285	1.24	1.04	0.94–1.15
Very high	472	1.84	1.21	0.96–1.51
p for trend		<.001	.018	
Subjective health, T1				
Very good	8,040	1	1	Ref.
Good	29,712	0.99	0.90	0.84–0.97
Not so good	10,009	1.41	0.93	0.84–1.02
Bad	573	2.31	1.17	0.95–1.45
p for trend		<.001	.002	
Smoking, T1				
No	31,710	1	1	Ref.
Yes	16,624	1.29	1.59	1.51–1.68
p for trend		<.001	<.001	
Illnesses and disabilities, T1				
None	34,084	1	1	Ref.
One	10,795	1.37	0.99	0.92–1.05
More than one	3,455	2.29	1.15	1.04–1.27
p for trend		<.001	.004	
Body mass, T1				
Normal	26,479	1	1	Ref.
Overweight	17,067	1.20	1.10	1.04–1.16
Obese	4,788	1.77	1.47	1.36–1.60
p for trend		<.001	<.001	
Use of health services, T1				
Yes	36,630	1	1	Ref.
No	11,704	1.17	1.17	1.11–1.24
p for trend		<.001	<.001	
Employment, T1				
Full time	22,964	1	1	Ref.
Part time	9,549	0.74	0.92	0.84–1.00
At home	6,428	1.22	1.24	1.13–1.36
No	9,393	2.82	1.56	1.44–1.69
p for trend		<.001	<.001	

Adjusted results are adjusted for demographics and the remaining T1 variables

scores. When controlling for demographics and the other variables in this analysis, the strength of the associations was strongly reduced.

Subjective health was fairly stable between T1 and T2, with correlations of Pearson $r = 0.46$ and polychoric $r = 0.57$. Persons who rated their health as "bad" were most likely to drop out. Adjusted results also pointed to an increased probability of drop-out among those with "very good" subjective health compared to those with "good". The stability of smoking between T1 and T2 for responders was Pearson $r = 0.70$ and tetrachoric $r = 0.91$. Corresponding correlation for body mass index was Pearson $r = 0.83$, for physical illness Pearson $r = 0.28$ and polychoric $r = 0.43$ and for employment polychoric $r = 0.55$. Smokers, overweight and obese persons, persons with poor physical health, persons who did not use health services, and unemployed persons were less likely to participate.

The only statistically significant interaction effect at $\alpha = 0.01$ level was between alcohol use and employment status (Wald = 28.34, $p = .005$). Logistic regression stratified by employment showed that the probability of drop-out among abstainers varied between employment groups, and was higher in the group who worked part time (OR = 1.63, CI 1.30–2.03), at home (OR = 1.37, CI 1.14–1.64), and among the unemployed (OR = 1.39, CI 1.23–1.56) than among those with a full-time job (OR = 1.15, CI 0.95–1.38) when compared to people with no consumption within each employment group. No statistically significant interactions were found between alcohol use or mental distress and any of the other variables. The *p* value for the interaction between alcohol use and mental distress was 0.201.

Analysis 3: spouse data

The odds ratio for not responding at T2 if the spouse responded at T2 was 0.09 (95% CI 0.08–0.09), corresponding to a tetrachoric correlation of 0.70. The odds ratios for non-participation among persons with valid spousal data from T2 are shown in Table 3.

The interspousal correlation for alcohol consumption was Pearson $r = 0.58$ and polychoric $r = 64$. The crude association between response and the spouse's alcohol consumption fell short of significance for both men and women. When mental distress, smoking, illness and demographics were added to the analyses, this association became significant for men, i.e. the male response could be predicted from their wives' alcohol consumption level. Men whose wives consumed some alcohol were less likely to be non-responders.

Table 3 Spouse answers at T2 as predictors for non-response at T2, among invitees with participating spouses

Variables	Women (invitee, male spouse)				Men (invitee, female spouse)			
	n	OR_{crude}	$OR_{adj.}$	95% $CI_{adj.}$	*n*	OR_{crude}	$OR_{adj.}$	95% $CI_{adj.}$
Alcohol, spouse								
Abstainer	1,518	0.99	1.00	0.80–1.24	2,997	0.86	1.00	0.87–1.14
No	3,698	1	1	Ref.	6,109	1	1	Ref.
Some	10,369	0.85	0.87	0.75–1.01	8,239	0.95	0.86	0.78–0.94
Medium	2,840	1.02	1.03	0.85–1.24	2,709	0.97	0.89	0.78–1.02
High	946	1.00	1.02	0.78–1.34	849	0.91	0.91	0.74–1.13
p for trend		.058	.108			.184	.021	
Mental distress, spouse								
Low	5,100	1	1	Ref.	5,282	1	1	Ref.
Average	8,165	1.10	1.11	0.97–1.27	8,239	0.90	0.92	0.83–1.01
Elevated	4,491	1.15	1.18	1.01–1.38	5,032	0.96	1.01	0.91–1.13
High	1,495	1.56	1.57	1.29–1.93	2,104	1.01	1.06	0.92–1.22
Very high	147	1.42	1.42	0.80–2.51	246	1.14	1.22	0.86–1.74
p for trend		<.001	<.001			.149	.081	
Smoking, spouse								
No	14,370	1	1	Ref.	14,940	1	1	Ref.
Yes	5,028	1.30	1.30	1.15–1.46	5,963	1.37	1.31	1.20–1.43
p for trend		<.001	<.001			<.001	<.001	
Illnesses and disabilities, spouse								
None	14,240	1	1	Ref.	16,622	1	1	Ref.
One	3,153	0.81	0.79	0.67–0.93	3,020	0.79	0.87	0.77–0.98
Two or more	2,005	0.91	0.84	0.69–1.03	1,261	0.72	0.81	0.67–0.98
p for trend		.025	.010			<.001	.015	

Crude results and results adjusted for demographics and the other variables in the table

Mental distress correlated Pearson $r = 0.23$ and polychoric $r = 0.27$ between spouses. Poor mental health in the spouse predicted a lower probability of response for women, i.e. if a man reported poor mental health it was then more likely that his wife did not participate. The crude and adjusted results were approximately the same, and a similar tendency was found among men, although it was not significant.

Smoking correlated Pearson $r = 0.32$ or tetrachoric $r = 0.51$ between spouses. Having a smoking spouse was associated with an increased probability of non-response, both for men and for women, with approximately the same estimates at a crude level when all the other variables were controlled. The correlation between spouses for physical illness or disability was Pearson $r = 0.16$ and tetrachoric $r = 0.28$. Men and women who had an ill or disabled spouse were less likely to be non-responders to the health survey than those who did not.

None of the potential interaction effects between alcohol use or mental distress and any of the other variables in the analysis or the invitee's demography was significant. The *p* value for the interaction between alcohol use and mental distress was 0.437 for female target persons and 0.921 for male target persons.

Analysis 4: adolescent children

The results of a logistic regression of data from children reporting on parental display of alcohol use, housing situation and smoking are presented in Table 4, crude and controlled for demographics.

Crude results showed that child report of having seen ones parents drunk was a significant predictor of both maternal and paternal response. A cross-tabulation revealed that non-response rates were lowest among those parents whose children reported that they had never seen them drunk. Within this group, 14.1% of invited mothers and 21.7% of invited fathers did not respond. Mothers and fathers of children who reported that they had seen their parents drunk several times a week had non-response rates of 22.2 and 34.5%, respectively. All groups had a significantly higher probability of non-response than the reference groups who had never seen their parents drunk. The odds ratio of non-response for each group was rising with an increasing frequency of seeing their parents

Table 4 Adolescent children's answers at T2 as predictors for participation at T2 among parents with participating children

Variables	Mothers				Fathers			
	n	OR_{crude}	$OR_{adj.}$	95% $CI_{adj.}$	*n*	OR_{crude}	$OR_{adj.}$	95% $CI_{adj.}$
Seen parents drunk								
Never	2,340	1	1	Ref.	2,162	1	1	Ref.
A few times	2,567	1.25	1.12	0.95–1.32	2,376	1.17	1.06	0.91–1.22
A few times a year	1,465	1.36	1.18	0.98–1.42	1,378	1.32	1.18	1.00–1.39
A few times a month	373	1.69	1.28	0.96–1.71	345	1.73	1.30	1.00–1.68
A few times a week	87	1.73	1.23	0.72–2.11	85	1.89	1.22	0.75–1.97
p for trend		<.001	.309			<.001	.159	
Housing								
Parents living together	5,467	1	1	Ref.	5,371	1	1	Ref.
Living with mother	994	2.20	1.38	1.07–1.79	552	2.50	1.73	1.33–2.26
Living with father	147	2.71	1.83	1.19–2.79	237	1.70	1.14	0.80–1.63
Other	224	1.70	1.19	0.82–1.73	186	2.41	1.66	1.16–2.38
p for trend		<.001	.018			<.001	<.001	
Smoking								
No	4,161	1	1	Ref.	4,409	1	1	Ref.
Yes	2,671	1.85	1.48	1.29–1.70	1,937	1.70	1.61	1.42–1.83
p for trend		<.001	<.001			<.001	<.001	

Adjusted results are adjusted for demographics and the other variables in the table

drunk. When also controlling for living situation, parental smoking and demographics, reports of having seen one's parents drunk were not a significant predictor of their non-participation, though there were tendencies in that direction.

Housing was related to non-response. Parents who did not live together were significantly less likely to participate than parents living together, with non-custodial parents seeming to have the lowest response rates. When controlling for other variables, the association became weaker, although all groups still had a higher probability of non-response than couples, with the exception of single parent fathers. Mothers and fathers who were smokers, as reported by their adolescent children, were significantly less likely to participate, both judging from crude and adjusted results. Child report of parental smoking was a reliable measure since they corresponded with self-report among parents who participated in 93% of the cases. Full consistency should not be expected because the wording was different.

No statistically significant interaction effects were found between parental displays of alcohol use and any of the other variables in the analysis.

Discussion

Alcohol use

Heavy drinkers were underrepresented compared to people with low consumption, which replicated previous studies [9–15]. An association between parental response and display of alcohol use reported independently by adolescent children supports this finding. In addition, people who defined themselves as abstainers were considerably more likely to drop out than low consumers. Thus, this study confirms the suspicion that abstainers are also underrepresented [2, 4, 7, 21, 22]. We were able to find non-response on both ends of the scale because alcohol use was analysed with several categories instead of linearly or dichotomously. As in previous research, the effect of alcohol use on participation appears to be modest. Using spousal consumption as an approximation to the invitee's consumption yielded unclear results, but also indicated curvilinearity. As the associations were weakened when controlling for other variables, alcohol use is probably not a major cause of non-response.

It has been suggested that heavy drinkers may be underrepresented because they are difficult to reach (wrong address, not at home, etc.) [2, 4].That some people avoid alcohol specifically as a topic [4] could not be the reason here, as HUNT was not presented as an alcohol study. Both abstention and heavy drinking are deviations from social norms and could be associated with personal characteristics that influence the willingness and opportunity to participate. For instance, people labelling themselves as being total abstainers in comparison to people who usually do not drink have higher symptom scores for anxiety and depression [48], smaller social networks [49] and are more religious [50]. Among abstainers, there could also be some

sick quitters, who are more similar to heavy drinkers. A lack of interest in obtaining a health check or in research could be a reason for non-response, and neither heavy drinking nor abstention indicates a special interest in health. People who feel like outsiders may also be less motivated to contribute to research as predicted by social exchange theory [51].

Mental distress

High levels of mental distress predicted non-response, and this association was greatly reduced when controlling for other variables. Both findings are in line with previous research [14, 16, 26, 27, 29]. A large sample such as this was needed in order to reach statistical significance. The inclusion of a "very high" mental distress group might have made the results clearer. There was an unforeseen tendency for people with below-average mental distress not to respond, compared to people with average mental distress. Mental health problems in participating husbands also predicted non-response among women.

Increased rates of non-response among mentally distressed people may reflect difficulties in locating them, that they do not have a surplus of energy to participate, social anxiety, or that they are not interested in their health or in contributing to research for whatever reason. One may speculate that the slight tendency for clearly mentally healthy people not to respond is caused by a lack of worrying, and therefore a lack of interest in their own health. As mental distress was only weakly correlated between partners, spouses cannot be seen as an approximation to the invitee in this regard. Since women's participation can nevertheless be predicted from their husband's level of mental distress, it is likely that some other factors related to the husband, family or resource situation affects the wives of the mentally distressed, for example the burden of care.

Demography and health

Results on demographics and health-related variables are generally in agreement with previous research. It is interesting to note that the highest participation was in the groups, which scored the second highest on the indicators of socioeconomic status (income and education). Smoking was a stable predictor for non-participation across all analyses. The other health-related variables, physical health, subjective health, use of health services and body mass were all independently associated with response.

Slightly different results from previous research may be due to various methodologies such as the categorisation of all variables and sample size or because surveys actually have different patterns of non-response. As the HUNT study was introduced to the participants as a health study, which offered a health check, one would expect participation to be associated with an interest in health, as our results show.

The moderate correlation between participation in T1 and T2 indicates that there is a good chance of re-recruiting participants lost between waves.

Strengths and weaknesses

In both the drop-out and partner analyses, persons who never participated and couples in which none of the spouses participated could not be analysed. Double non-response may indicate a narrowing of variance in willingness to participate, thus implying that estimates from these two analyses may be somewhat downwardly biased. This could be particularly noticeable in the spouse analysis, in which spouse participation is highly interdependent. That analysis also provided the least clear-cut results. Drinking and mental distress appear to be somewhat more widespread among drop-outs and probably even more so among persons who never participated. In another Norwegian study [19] only 18% of people who received a pension for substance use related diagnoses participated. It is, however, unclear to what extent double non-response attenuated the effect sizes. Those receiving a disability pension only represent the most extreme cases, and also, many of those people may be abusing other substances than alcohol.

The analysis of demographic data from registries as well as data from the adolescent study stays clear of the problem with double non-responders. Only a fraction of the invitees were represented as parents in the adolescent sample, but for those with children aged 13–19 this sample is quite complete, with a 91% response rate. It was not possible, however, to distinguish whether the adolescents had seen their mother or father drunk, which may be a limitation to the study and probably attenuate the predictive power of this variable for the individual participation of each of the parents.

The high partner correlation for participation in this study may partly reflect that persons from the same households were invited to come to the site of the health examination at the same time. Because of this, using information about partners as proxies to information about the target person turned out to be problematic. Perhaps a lower partner correlation should be expected for purely postal questionnaire studies.

As the data are self-reported, misclassification could occur, thereby leading to an underestimation of the associations with non-response. For alcohol use, underreporting occurs [52], but as the alcohol measures are highly correlated between T1 and T2 and between spouses, misclassification is either modest or consistent. Misclassification

could underestimate effect sizes more among heavy drinkers than among abstainers, as abstention is a more easily defined and measured endpoint.

The results may be more generalisable to similar health studies than to postal surveys, as the participants had to travel to an examination site and spend more time than if they were only to answer a questionnaire, and they may have been motivated by receiving the health check. Even so, as the results for most variables replicated research on non-response in different types of studies, it may also be that the same variables predict participation across methods.

Implications and conclusion

Although each single odds ratio for non-participation primarily takes moderate values, combinations of elevated risk, calculated as products of two or more odds ratios, may yield a very high risk of non-response. For example, mentally distressed, young, single males will be severely underrepresented in a study such as HUNT and should be studied otherwise.

It seems like people who report alcohol and mental distress problems are less likely to respond to a health survey such as HUNT, though only moderately, and this association is rather weak when controlling for other variables. It is worth noting that abstainers are the alcohol consumption group with the highest attrition, and that there is a considerable difference between this group and the no consumption group. The large sample size provided good estimates of associations between response and other variables. The demographic data are particularly reliable.

The underrepresentation of specific groups is important to consider when interpreting future and previous research in HUNT, other general population-based health studies, and questionnaire studies in general. Results on alcohol consumption and mental health may be affected by non-response. Nevertheless, the selective non-response rates observed in this study are of a modest magnitude, which makes us believe that these kinds of studies can be suitable for investigating risk and protective factors in relation to causes or consequences of alcohol use and mental distress, or at the very least, that the HUNT study is suitable for such purposes. Still, estimates of prevalence or incidence may be somewhat biased.

Acknowledgments Nord-Trøndelag Health Study (The HUNT Study) is a collaboration between HUNT Research Centre (Faculty of Medicine, Norwegian University of Science and Technology NTNU), Nord-Trøndelag County Council and The Norwegian Institute of Public Health. This work was supported by grants from The Research Council of Norway (project number 190519), and forms part of a doctoral thesis to be submitted to the Department of Psychology, University of Oslo.

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PAPER 2

Torvik, F. A., Rognmo, K., Ask, H., Røysamb, E., & Tambs, K. (2011). Parental alcohol use and adolescent school adjustment in the general population: results from the HUNT study. *BMC Public Health*, *11*, 706. doi:10.1186/1471-2458-11-706

Torvik et al. BMC Public Health 2011, 11:706
http://www.biomedcentral.com/1471-2458/11/706

BMC Public Health

RESEARCH ARTICLE Open Access

Parental alcohol use and adolescent school adjustment in the general population: Results from the HUNT study

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Abstract

Background: This study investigates the relationship between parental drinking and school adjustment in a total population sample of adolescents, with independent reports from mothers, fathers, and adolescents. As a group, children of alcohol abusers have previously been found to exhibit lowered academic achievement. However, few studies address which parts of school adjustment that may be impaired. Both a genetic approach and social strains predict elevated problem scores in these children. Previous research has had limitations such as only recruiting cases from clinics, relying on single responders for all measures, or incomplete control for comorbid psychopathology. The specific effects of maternal and paternal alcohol use are also understudied.

Methods: In a Norwegian county, 88% of the population aged 13-19 years participated in a health survey (N = 8984). Among other variables, adolescents reported on four dimensions of school adjustment, while mothers and fathers reported their own drinking behaviour. Mental distress and other control variables were adjusted for. Multivariate analysis including generalized estimation equations was applied to investigate associations.

Results: Compared to children of light drinkers, children of alcohol abusers had moderately elevated attention and conduct problem scores. Maternal alcohol abuse was particularly predictive of such problems. Children of abstainers did significantly better than children of light drinkers. Controlling for adolescent mental distress reduced the association between maternal abuse and attention problems. The associations between parental reported drinking and school adjustment were further reduced when controlling for the children's report of seeing their parents drunk, which itself predicted school adjustment. Controlling for parental mental distress did not reduce the associations.

Conclusions: Parental alcohol abuse is an independent risk factor for attention and conduct problems at school. Some of the risk associated with mothers' drinking is likely to be mediated by adolescent mental distress. Despite lowered adjustment on the externalizing dimensions, children of alcohol abusers report that they enjoy being at school as much as other children.

Background

Alcohol abuse and dependence are among the most prevalent psychiatric disorders [1,2], also among parents [3,4]. An extensive amount of research has been conducted on the psychological functioning of children of alcohol abusers, although relatively few studies have addressed these children's school adjustment. Most of the research on children of alcohol abusers recruits parents from clinical treatment or uses single responders for both exposure and outcome measures. This study investigates school adjustment, reported by a population based sample of adolescents, in relation to alcohol use reported by parents, while controlling for possible confounding or mediating psychosocial factors.

School adjustment can be defined as the degree to which adolescents "become comfortable, engaged and successful in their school environment" [5]. Previous research shows that compared to other children, children of alcohol abusers exhibit lower academic achievement [6,7]. This vulnerability is also reflected by their

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elevated risk for conduct problems, attention problems, hyperactivity, impulsiveness, delinquency, and unemployment [3,8-12]. Attention and conduct problems are important parts of school adjustment [13,14]. Dimensions such as satisfaction with school and academic performance would also be appropriate to include when assessing which types of school adjustment that may be impaired in children of alcohol abusers.

Theoretically, several perspectives predict impaired school adjustment and related psychopathology in these children. There is extensive evidence regarding the genetic influence on externalizing behaviour, and genetic co-variance between different kinds of externalizing behaviour [15-17]. Accordingly, one should expect children of alcohol abusers to have an increased probability of not only developing alcohol problems themselves, but also other kinds of externalizing behaviour. Prenatal alcohol exposure can also lead to poor academic performance [6,18]. Risk may also be transmitted by social strains linked to parental alcohol abuse, such as impaired parenting, or contextual factors, such as limited socioeconomic resources [19-23]. These burdens may make the children more susceptible to maladjustment, although each risk factor usually makes only small contributions to explaining variance in outcomes [24].

It is, however, difficult to isolate parental drinking from other risk factors. A part of the vulnerability seen among children of alcohol abusers may stem from other parental psychopathology, or from an accumulation of risk factors in the family. A majority of parents recruited through alcoholism treatment programmes had comorbid psychiatric problems [25]. Different studies have given conflicting results as to whether there is any remaining association between psychosocial functioning and parental alcohol abuse when controlling for other illnesses [25-28].

Moreover, findings from studies on abusers in treatment may not be generalizable to the general population. Only a small fraction of alcohol abusers in the general population are registered by clinics [4,8,29,30] and these are likely to have a more severe drinking problem, and more comorbid disorders [31]. Clinical studies may be well-suited for studying the children most affected by parental alcohol abuse, but less severe cases should be studied in population based samples [3,32]. However, studies with non-clinical assessment of alcohol abuse [33,34] often rely on single responders reporting on both their own outcome and, retrospectively, parental alcohol use. Response style and mood-congruent memory may lead to positive or negative responses to both measures, thereby yielding correlated error terms and inflated effect size estimates. Studies which leave the definition of alcohol abuse to the responder [32,35,36] are especially vulnerable to such biases.

Different effects of maternal and paternal alcoholism are understudied [12], although some studies suggest that maternal drinking has a greater impact than paternal drinking [8,37], or that maternal alcohol use is more predictive of internalizing problems, and paternal alcohol use of externalizing problems [25,38]. If maladjustment is transmitted by social strains, one should expect variables expressing stress to mediate the associations between parental drinking and child maladjustment. Therefore, if these children exhibit poor school adjustment, it is important to know whether this is caused by other problems they have previously been found to have, like mental distress [12,39] and poor social network [40,41], or whether it appears independent of those factors. A part of the causal chain may be exposure to parental drinking. One should expect that being directly exposed to parental drinking is more harmful than having parents who conceal their drinking. Moreover, as contextual factors may influence child adjustment, it is important to control for potential confounders, such as divorce, and other demographic variables.

The current study addresses methodological limitations in previous research by using a general population sample of adolescents and their parents to investigate four dimensions of school adjustment across the full range of parental drinking, from abstainers to abusers. By employing this method, high generalizability will be achieved. It was possible to study the unique contributions of maternal and paternal drinking and to control for parental mental distress as a possible confounder. Possible mediating effects of witnessing the parents intoxicated were investigated, and so were the possible mediation of effects of parental abuse on school adjustment by mental distress or poor social network.

Methods

Sample

The Nord-Trøndelag Health Study (HUNT-2) is a survey of the adolescent and adult population of Nord-Trøndelag County, Norway, carried out between 1995 and 1997. During school hours, 8984 adolescents (91% of the invited) aged 13 to 19 (mean age 16.0 years, SD = 1.8) filled in a questionnaire (Young-HUNT). Adolescents who were not enrolled in school (3%) were not invited.

At the same time, all inhabitants aged 20 or more were invited to the adult version of the survey, which consisted of a health examination and two questionnaires. The participating adolescents, of whom some were siblings, had a total of 7036 invited mothers (mean age 42.2 years, SD = 5.3), of which 71.9% replied to both questionnaires. Among 6535 invited fathers (mean age 45.2 years, SD = 5.7), 61.1% returned both

questionnaires. More details regarding the HUNT-2 [42] and Young-HUNT [43] studies have been described elsewhere and are available at http://www.ntnu.edu/hunt.

Ethics

The data matching between family members was carried out by Statistics Norway using personal birth identity numbers assigned to every Norwegian citizen. Before the data were returned to the researchers, the identity number was deleted, thus preventing identification of the participants. The Norwegian Data Inspectorate and the Regional Ethics Committee have approved of the study. All responders gave their written informed consent.

Measures

School adjustment

School adjustment was measured with 14 items related to various experiences in school. The measure has been used in several studies and has been described elsewhere [44,45]. All items had four response options, ranging from "never" to "very often". An exploratory factor analysis using oblique rotation and polychoric correlations for ordinal data revealed that a solution with four factors provided a good fit (CFI = 0.99, TIL = 0.97, RMSEA = 0.05) and was psychologically meaningful. The factors were labelled attention problems ("attention"), satisfaction with academic results ("academic"), conduct problems ("conduct"), and dissatisfaction with school in general ("dissatisfaction"). Sum scores for each factor were calculated.

The items with the highest loadings on attention problems were "Become bored or dissatisfied", "Have difficulties concentrating during class" and "Skip school". Satisfaction with academic results was measured with "Understand what is being taught" and "Are satisfied with your test results". Conduct problems had the highest loadings from "Are reprimanded by the teacher", "Argue with the teacher", "Get in a fist fight", and "Cannot manage to be calm/sit still during class". Dissatisfaction with school in general consisted of "Look forward to going to school", "Think that gym or art is fun", "Think other classes are fun", and "Have fun during recess/break time". One question that did not fit into any factor was excluded ("Are teased/harassed by other students"). The Cronbach's alpha was 0.60 for the attention dimension, 0.59 for academic, 0.64 for conduct and 0.56 for dissatisfaction.

Due to a highly skewed distribution, the conduct problem score was natural logarithmically transformed to obtain a closer to normal distribution. All factors were scaled such that high values indicated poor adjustment and standardized in order to show effect sizes in terms of fractions of standard deviations.

Parental alcohol use

A combination of reported consumption and the CAGE alcohol screening questionnaire [46] was used to define alcohol use. The respondents were asked whether they were abstaining from alcohol, and, if not, asked to numerically state how many days they usually drank alcohol during one month, and how many units of beer, wine and liquor they usually drank over a two-week period. The frequency and amount were summed. The CAGE questionnaire consists of four yes/no statements related to alcohol use. Two items regarding criticism and guilt were collapsed. Both had to be endorsed to score one point. These items may reflect attitudes to drinking rather than problem drinking itself. In our data, these two items also turned out to be considerably less associated with consumption than the other CAGE items ("cut down" and "eye-opener"), each scored as one point. Abstainers were scored "no" or 0 on missing items.

Parents were classified into four different categories: "abstainers", "light drinkers", "at risk drinkers" and "alcohol abusers". Abstainers were categorized as a separate group since they differ in some respects from people with very low consumption [10,47]. Parents were classified as alcohol abusers if they were among the top 10% consumers within their gender, together with having scored at least 1 on the collapsed CAGE questionnaire. Parents who either had a positive score on the collapsed CAGE or who were among the top 10% consumers were coded into the "at risk" category. The remaining responders were categorized as light drinkers and used as reference group. This classification rendered 2.2% (135) of participating mothers as alcohol abusers and 12.8% (781) as being at risk, while 4.5% (219) of fathers were alcohol abusers and 16.5% (807) at risk. Mothers and fathers classified as abusers scored on average 16.8 and 26.7 on the summative index combining frequency and amount mentioned above, which is 3.4 and 3.9 times as high as the sample means. The test-retest reliability was measured among 8298 parents who participated both in the present study and in a similar study conducted 11 years earlier (HUNT-1). The polychoric correlation between the present alcohol measure and drinking frequency in the previous survey was 0.63. This indicates that alcohol use is relatively stable and reliably measured.

Seeing parents drunk

Adolescents were asked whether they had seen either of their parents drunk. Five response categories were possible, ranging from "never" to "a few times a week". It was not possible to distinguish between having seen the mother or father drunk. Sibling correlations show high reliability: The polychoric correlation was 0.57 in 1483 pairs of siblings and 0.68 in 96 pairs with less than one year of age difference.

Adolescent mental distress

Mental distress among adolescents was measured with SCL-5, which consists of five items measuring symptoms of anxiety and depression over the last two weeks. It correlates 0.92 [48] with the 25-item Hopkins Symptom Checklist [49], on which it is based. Previous studies have concluded that the measure has satisfactory validity and reliability [48,50]. Cronbach's alpha in the present study was 0.79. The recommended [50,51] cut-off (mean ≥ 2) rendered 15.6% of the adolescents as mentally distressed.

Parental mental distress

Symptoms of anxiety and depression were measured by 13 out of 14 items from the Hospital Anxiety and Depression Scale [52] and the seven-item CONOR Mental Health Index [53]. The Cronbach's alpha for a global summative mental health indicator, including nine anxiety items and eleven depression items was 0.91 for mothers and 0.90 for fathers. The top 10% of mothers and fathers were coded as mentally distressed. On average, distressed mothers and fathers scored 2.44 and 2.49 standard deviations above the mean of parents who were not categorized as mentally distressed.

Social network

The adolescents' number of close friends was obtained with a single question (four response categories ranging from "none" to "four or more") and used as an index of social network.

Demographics

The governmental statistics agency Statistics Norway provided demographic data on age, sex, education, income, and marital status. Education was grouped into five categories. The income of fathers and mothers was totalled to reflect family income. The age of parents and adolescents was used as continuous measures. Marital status was used together with the personal identification numbers of husbands and wives to determine whether the parents of a child were living together as a married or cohabiting couple. Dissolved relationships included divorcees, people who never lived together, unknown, and deceased parents.

Missing data

Missing data were imputed instrument-wise, using the SPSS Missing Value Analysis (MVA), Expectation Maximization (EM), for respondents with valid data for at least half the items of each instrument.

Across responders, 0.6% of the item scores used to calculate school adjustment were imputed, while 2.1% of the adolescents had more than 50% blank school adjustment items and were omitted from the analyses. For adolescent mental distress, 0.4% of the records were imputed, leaving 2.0% with missing instrument scores. Maternal and paternal mental distress had 6.7% and 4.9% of the records imputed, respectively, leaving 0.9% of mothers and 0.7% of fathers who participated with missing instrument scores. Maternal and paternal alcohol consumption had 0.7% and 0.4% of the data imputed, leaving 4.6% and 4.5% with missing values. Analyses ran with and without imputed data provided similar results. Only results from imputed data are presented.

In order to prevent children with only one participating parent from being excluded from the analyses, missing on the parental alcohol and mental distress variables was coded into separate categories, thus providing results for children of non-responding parents as well. In addition, to keep children with unidentified or dead fathers (N = 100) and mothers (N = 9) in the analyses, the missing parents' age was estimated from the age of the co-parent. This treatment of the data permitted all adolescents with valid school data to be included in the final sample.

Statistical analyses

Multivariate analysis of covariance was conducted in order to investigate group differences in the four school adjustment dimensions, with maternal and paternal alcohol use as the primary predictors. Generalized Estimating Equations was applied to adjust for statistical dependence between siblings.

Separate analyses were run with maternal and paternal alcohol use as single predictors in order to observe the unadjusted associations. Subsequently, conjoint analyses were run, in which the statistical effects of each of the parent's alcohol use were adjusted for the other parent's alcohol use, in addition to adjusting for the demographic variables.

Next, adjustments were made for potentially confounding or mediating variables. The design does not permit safe conclusions regarding the status of some of the predictors as confounders or mediators. Nonetheless, we *a priori* tentatively classified the covariates as confounding or mediating factors, based on their assumed temporal relation to alcohol abuse. Divorce and parental mental distress were considered likely confounders. Adolescent mental distress, seeing parents drunk, and adolescent social network were considered possible mediators, as they are likely to occur after the onset of parental alcohol abuse. To see what changes each variable caused to the model, adjustments were made stepwise, adding one variable at a time to the conjoint demography adjusted analysis.

Ultimately, all variables were entered into the model simultaneously, yielding estimates of the unique direct association between school adjustment and each predictor.

All possible interaction terms between parental alcohol use and the child's age or sex or the confounders

and mediators mentioned above were tested in the model controlling for demography and both parent's alcohol use. The possible interaction effect between paternal and maternal alcohol use was also tested. In total 15 possible interactions were tested. Bonferroni adjustment would have suggested $\alpha = 0.003$. This is, however, known to be too conservative and to reduce the power of the study [54], so to share trends with the reader, interaction effects with $p < 0.01$ are reported.

Software

The "polycor" library of R version 2.11.1 was used for calculating polychoric correlations. Mplus 5.2 was used to factor analyse the polychoric correlation matrix. Subsequent analyses were run in SPSS 17.0.

Results

Crude and partially adjusted associations

Correlations between the four dimensions of school adjustment varied between 0.11 and 0.41, with an average of 0.31. Table 1 presents crude group differences in the adolescents' school adjustment by their mothers' and fathers' alcohol use, as well as results adjusted for the other parent's alcohol use and for demographics. Since the outcome variables were standardized, results are given as group scores above or below the reference group in fractions of standard deviations, denoted *d* in the tables.

Univariate results show that children of abusing and at-risk mothers and fathers had moderately higher levels of attention and conduct problems (upper part of Table 1). In particular, maternal problem drinking seems to be important for maladjustment in children. Children of abstaining mothers had lower levels of problems on the attention, academic and conduct dimensions in comparison to light drinkers, while abstaining fathers indicated better academic adjustment only.

The alcohol use of mothers and fathers was related, with a polychoric correlation of 0.58. When the two parents' drinking were entered into the model at the same time and adjusted for demographics, the associations with attention and conduct problems were somewhat reduced (lower part of Table 1). Parental alcohol use was still associated with their children's adjustment on attention and conduct problems, and children of abstainers still did better than children of light drinkers on attention and conduct if the mother was abstaining, and on academic if the father was abstaining. Children of mothers who did not participate did just as well as children of light drinkers, whereas children of non-responding fathers had modestly elevated scores on attention, academic, and conduct problems.

Since parental problem drinking was not associated with satisfaction with academic results or with school in general, further results for these outcome variables are not shown.

Confounders and mediators

Each of the variables possibly confounding or mediating the associations between parental alcohol use and school adjustment were added to the conjoint adjusted analyses, one at a time.

When relationship dissolution, parental mental distress, or number of friends was added to the analyses, changes in associations between parental drinking and school adjustment were negligible, all changes $\Delta d \leq 0.02$. Due to these small differences compared to the lower part of Table 1, the full results after entering each of these predictors are not tabulated at this stage. However, as these variables had independent associations with school adjustment, they are again included in the final analysis.

Results adjusted for adolescent mental distress and report of seeing parents drunk are shown in Table 2. The associations between maternal alcohol abuse and attention problems and conduct problems were weakened when the adolescents' level of mental distress was added to the analyses ($\Delta d = 0.08$ for attention, $\Delta d = 0.03$ for conduct). Associations with paternal alcohol abuse remained nearly unchanged ($\Delta d = 0.01$), for both attention and conduct problems. Changes in estimates for at-risk drinking were small ($\Delta d \leq 0.02$). Although the estimates for maternal alcohol abuse fell below the significance level, maternal abuse was still as strong a predictor as paternal abuse.

When including the predictor variable "seeing parents drunk" in the analyses, all statistical effects of parental abuse or at-risk drinking were reduced to a non-significant size. The strongest reductions in effect size took place for paternal alcohol abuse and conduct problems. Both adolescents' mental distress and report of seeing their parents drunk were strongly predictive of school adjustment.

All predictors combined

When all predictors were entered into the model at the same time, the estimates for maternal abuse decreased further, while those of paternal abuse were similar to the results from the analysis that included the variable of seeing parents drunk. Although parental drinking was not significantly associated with school adjustment, report of seeing parents drunk was predictive of maladjustment in school. Children of parents with dissolved relationships, and mentally distressed adolescents also had more conduct and attention problems. The father's mental distress predicted more attention problems, whereas the children who had a good social network scored higher on the conduct problems scale. All missing value groups deviated little (d values 0.01 - 0.07) from the reference groups. The results for all predictor variables except demography are shown in Table 3.

Table 1 Crude and adjusted associations between parental alcohol use and four dimensions of school adjustment

		Attention			Academic			Conduct			Dissatisfaction		
	N	d		95% C.I.	d		95% C.I.	d		95% C.I.	d		95% C.I.
Crude associations													
Maternal alcohol			***			***			***				
Abuse	134	0.35	**	0.13 - 0.56	0.03		-0.15 - 0.21	0.32	**	0.11 - 0.53	0.05		-0.14 - 0.24
At risk	768	0.15	***	0.07 - 0.23	0.02		-0.06 - 0.10	0.10	*	0.02 - 0.16	-0.02		-0.09 - 0.06
Abstainer	491	-0.11	*	-0.20 - -0.02	-0.12	*	-0.22 - -0.03	-0.19	***	-0.28 - -0.11	-0.01		-0.11 - 0.09
Missing response	2818	0.09	***	0.04 - 0.14	0.12	***	0.07 - 0.17	0.04	-	0.00 - 0.09	0.03		-0.02 - 0.08
Light drinking	4580	0			0			0			0		
Paternal alcohol			***			***			***			**	
Abuse	215	0.23	**	0.08 - 0.38	0.02		-0.13 - 0.17	0.24	**	0.08 - 0.40	0.08		-0.07 - 0.22
At risk	799	0.13	**	0.05 - 0.20	0.02		-0.06 - 0.10	0.14	***	0.06 - 0.21	0.04		-0.04 - 0.12
Abstainer	281	-0.08		-0.19 - 0.04	-0.23	***	-0.36 - -0.10	-0.07		-0.18 - 0.04	-0.08		-0.21 - 0.05
Missing response	4000	0.14	***	0.10 - 0.19	0.13	***	0.08 - 0.17	0.14	***	0.09 - 0.18	0.08	**	0.03 - 0.12
Light drinking	3496	0			0			0			0		
Adjusted for other parent's alcohol use and for demography													
Maternal alcohol			***			**			***				
Abuse	134	0.27	*	0.06 - 0.49	0.06		-0.11 - 0.24	0.27	**	0.07 - 0.48	0.04		-0.15 - 0.23
At risk	768	0.09	*	0.01 - 0.17	0.06		-0.02 - 0.14	0.08		0.00 - 0.16	-0.02		-0.09 - 0.06
Abstainer	491	-0.12	*	-0.22 - -0.02	-0.07		-0.18 - 0.04	-0.18	***	-0.28 - -0.08	0.02		-0.09 - 0.12
Missing response	2818	0.03		-0.02 - 0.08	0.05		0.00 - 0.10	-0.01		-0.06 - 0.04	-0.01		-0.06 - 0.04
Light drinking	4580	0			0			0			0		
Paternal alcohol			***						***				
Abuse	215	0.21	**	0.05 - 0.36	0.06		-0.09 - 0.20	0.18	*	0.01 - 0.34	0.10		-0.05 - 0.24
At risk	799	0.11	**	0.03 - 0.18	0.03		-0.05 - 0.11	0.11	**	0.03 - 0.19	0.05		-0.03 - 0.12
Abstainer	281	-0.04		-0.16 - 0.08	-0.17	*	-0.31 - -0.04	0.06		-0.06 - 0.19	-0.09		-0.24 - 0.05
Missing response	4000	0.09	***	0.04 - 0.14	0.06	*	0.01 - 0.11	0.11	***	0.06 - 0.16	0.05		-0.01 - 0.10
Light drinking	3496	0			0			0			0		

Demography includes adolescent age and sex, parental age, education and income.

Cohen's *d* express group differences as fractions of standard deviations.

* = p < 0.05; ** = p < 0.01; *** = p < 0.001.

Interactions

No interaction effects statistically significant at the 0.01 level were found between maternal and paternal alcohol use or between alcohol use and parental mental distress or the child's gender, age, social network or mental distress. An interaction effect was found between paternal alcohol use and relationship dissolution on attention (Wald Type III = 14.766; p = 0.005). Children of alcohol abusing fathers with dissolved relationships had higher levels of attention problems than expected from the totalled main effects of abuse and relationship dissolution (additional effect: d = 0.57, C.I. 0.15 - 0.99, p = 0.007). The effect of seeing parents drunk varied with paternal alcohol use category on attention (Wald Type III = 181.93; p < 0.001) and conduct problems (Wald Type III = 81.41; p < 0.001). Post hoc tests included too many group combinations to provide meaningful results, but seeing parents drunk tended to be more predictive of these problems if the father did not participate or if the father was in the at risk group.

Discussion

Maternal and paternal alcohol abuse or at-risk drinking was associated with moderately higher levels of attention and conduct problems, both at the crude level and when demography and the other parent's consumption was controlled for. There seems to be a dose-response trend, as the at-risk groups consistently scored between abusers and light drinkers on these outcomes. Heavy drinking in the parents did not predict dissatisfaction with school in general or with academic results in any of the analyses, even though this study has high power. Parental alcohol use predicted poor adjustment only on the impulse control-related dimensions attention and conduct. It is not surprising that we find associations with these dimensions. Children of alcoholics have previously been found to have elevated risks for attention and conduct problems [7,18] and the related diagnoses ADHD [15] and conduct disorder [16]. Previous studies show strong genetic components in the link between externalizing behaviour in parents and the children, such as

Table 2 Results adjusting for adolescent mental distress and for seeing parents drunk

		Attention			Conduct		
	N	d		95% C.I.	d		95% C.I.
Adjusted for adolescent mental distress							
Maternal alcohol			***			***	
Abuse	133	0.19		-0.01 - 0.40	0.24	*	0.03 - 0.45
At risk	764	0.08	*	0.01 - 0.16	0.08		0.00 - 0.15
Abstainer	489	-0.09		-0.18 - 0.01	-0.16	**	-0.26 - -0.06
Missing response	2796	0.03		-0.02 - 0.08	-0.01		-0.06 - 0.04
Light drinking	4546	0			0		
Paternal alcohol			**			***	
Abuse	215	0.20	**	0.05 - 0.35	0.17	*	0.01 - 0.33
At risk	793	0.09	*	0.02 - 0.16	0.10	*	0.02 - 0.18
Abstainer	279	-0.06		-0.18 - 0.06	0.05		-0.08 - 0.18
Missing response	3963	0.07	**	0.02 - 0.12	0.10	***	0.05 - 0.15
Light drinking	3478	0			0		
Adolescent mental distress							
Distressed	1361	0.82	***	0.76 - 0.88	0.37	***	0.31 - 0.43
Not distressed	7367	0			0		
Adjusted for seeing parents drunk							
Maternal alcohol							
Abuse	131	0.20		-0.01 - 0.42	0.20		-0.01 - 0.42
At risk	755	0.05		-0.03 - 0.13	0.04		-0.04 - 0.12
Abstainer	477	-0.06		-0.16 - 0.04	-0.11	*	-0.21 - 0.00
Missing response	2742	0.02		-0.03 - 0.07	-0.02		-0.07 - 0.04
Light drinking	4490	0			0		
Paternal alcohol						**	
Abuse	209	0.14		-0.01 - 0.29	0.07		-0.09 - 0.23
At risk	781	0.05		-0.03 - 0.12	0.04		-0.04 - 0.12
Abstainer	273	0.03		-0.09 - 0.16	0.15	*	0.02 - 0.28
Missing response	3901	0.07	**	0.02 - 0.12	0.09	***	0.04 - 0.14
Light drinking	3431	0			0		
Seen parents drunk			***			***	
A few times a week	111	0.71	***	0.43 - 0.98	0.71	***	0.46 - 0.97
A few times a month	453	0.50	***	0.39 - 0.61	0.51	***	0.41 - 0.62
A few times a year	1746	0.25	***	0.19 - 0.31	0.36	***	0.30 - 0.42
A few times	3181	0.20	***	0.16 - 0.25	0.25	***	0.20 - 0.30
Never	3104	0			0		

Controlled for demography (adolescent age and sex; parental age, education and income).

Cohen's *d* express group differences as fractions of standard deviations.

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

parental drinking and behavioural control in the offspring [15,16]. Also, social strains such as negative life events, family conflict or dysfunction, disruption of routines, or neglect can also foster maladjustment [19,20]. From the social strain perspective, a lack of association between parental alcohol abuse and satisfaction at school could simply be explained by the school representing an escape from a troublesome home environment for some adolescents.

Maternal drinking was particularly predictive of high attention and conduct problem scores in our data. Our results are consistent with previous findings that maternal drinking has a greater impact on children than paternal drinking [8,37]. If not simply due to statistical fluctuations, the apparent heightened risk associated with mothers compared to fathers may be explained by impairment of the primary caregiver role, commonly undertaken by the mother, or by drinking during pregnancy. The present study does not have data on drinking during pregnancy, but previous studies have found that moderate prenatal exposure to alcohol increases the risk of conduct problems [10,18] and learning difficulties

Table 3 Associations between parental alcohol use and attention and conduct problems, adjusting for all covariates

		Attention			Conduct		
	N	d		95% C.I.	d		95% C.I.
Maternal alcohol							
Abuse	130	0.13		-0.08 - 0.33	0.17		-0.04 - 0.39
At risk	748	0.04		-0.04 - 0.12	0.03		-0.05 - 0.11
Abstainer	474	-0.05		-0.15 - 0.04	-0.09		-0.19 - 0.01
Missing response	2714	0.02		-0.05 - 0.08	0.02		-0.05 - 0.08
Light drinking	4448	0			0		
Paternal alcohol							
Abuse	209	0.12		-0.03 - 0.28	0.05		-0.11 - 0.21
At risk	770	0.02		-0.05 - 0.10	0.04		-0.05 - 0.12
Abstainer	269	0.01		-0.11 - 0.13	0.14	*	0.01 - 0.27
Missing response	3861	0.04		-0.03 - 0.10	0.04		-0.02 - 0.11
Light drinking	3405	0			0		
Adolescent mental distress							
Distressed	1325	0.79	***	0.72 - 0.85	0.38	***	0.32 - 0.44
Not distressed	7189	0			0		
Maternal mental distress							
Distressed	677	0.06		-0.02 - 0.14	0.00		-0.08 - 0.08
Missing response	1658	0.01		-0.07 - 0.08	-0.07		-0.15 - 0.01
Not distressed	6198	0			0		
Paternal mental distress			*				
Distressed	559	0.11	**	0.03 - 0.20	0.06		-0.03 - 0.15
Missing response	2739	0.02		-0.05 - 0.09	0.06		-0.01 - 0.14
Not distressed	5237	0			0		
Relationship dissolution							
Dissolved	1841	0.14	***	0.08 - 0.20	0.09	**	0.03 - 0.15
Married or cohabiting	6673	0			0		
Number of friends						***	
None	138	0.18		-0.02 - 0.37	-0.34	***	-0.50 - -0.17
One	401	0.08		-0.02 - 0.18	-0.24	***	-0.34 - -0.14
Two or three	2735	-0.01		-0.06 - 0.03	-0.15	***	-0.20 - -0.11
Four or more	5240	0			0		
Seen parents drunk			***			***	
A few times a week	110	0.56	***	0.30 - 0.81	0.62	***	0.37 - 0.87
A few times a month	447	0.41	***	0.31 - 0.52	0.46	***	0.35 - 0.56
A few times a year	1736	0.20	***	0.15 - 0.26	0.33	***	0.27 - 0.39
A few times	3147	0.18	***	0.13 - 0.22	0.23	***	0.18 - 0.28
Never	3074	0			0		

Controlled for demography (adolescent age and sex; parental age, education and income).

Cohen's *d* express group differences as fractions of standard deviations.

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

[6]. Also, since women drink less than men on average, pathological drinking in mothers may indicate a more severe stressor or higher heritable vulnerability to impulse control problems than drinking in fathers.

Children of abstainers had fewer attention, conduct, and academic problems than children of light drinkers. This finding stands in contrast to the results from a British study [10]. One may speculate that different factors lead to abstention in Norway and in the United Kingdom. As light drinking among parents is unlikely to constitute a social strain, we believe it is more likely that the difference between abstainers and light drinkers stems from lifestyle or personality factors rather than alcohol use per se.

Previous studies disagree on whether other parental psychopathology confounds the association between parental drinking and psychosocial functioning among their children [25-28]. The associations seen in the present

study cannot be ascribed parental mental distress as it did not act as a confounder: adding this variable to the analysis did not substantially alter associations between parental drinking and school adjustment. Parental psychopathology may be more severe in studies finding such confounding. In addition, a high number of untreated cases in the general population, likely to be included in the present study, occur without severe comorbidity [1].

Adolescent mental distress was a strong predictor of attention problems, and a moderate predictor of conduct problems. Adolescent mental distress was moreover associated with maternal drinking, and the association between maternal abuse and attention problems was reduced when this variable was added to the analyses. It may therefore be considered a partial mediator for maternal alcohol use on attention problems. Before adjusting for adolescent mental distress, maternal drinking was more strongly associated with attention problems than was paternal drinking. Hence, it may be that maternal drinking has some additional effect on attention problems that is mediated by the adolescents' mental distress. However, most associations were independent of this distress: similar mediation was not seen between paternal drinking and attention problems, and the mediation on conduct seems to be small or non-existent.

The adolescent self-report of having witnessed parental drunkenness was a stronger predictor of maladjustment than was parental alcohol report. Adolescent report of seeing their parents drunk was associated with both parental report of drinking and outcome, and all effect sizes were reduced when this variable was added to the analyses. Hence, it is likely that seeing one's parents drunk mediates a non-trivial part of the association between parental alcohol use and school adjustment. One interpretation of this would be that being with intoxicated parents is harmful in itself, and that this question measures the subjective burden of having an alcoholic parent. Alternatively, this question may tap into variation in alcohol problems that is not captured by our parental alcohol measure. However, unlike with parent-reported measures, associations between predictors and outcome both reported by the adolescents may also partially reflect mood-congruent response consistency.

Children who had alcohol abusing fathers with a dissolved relationship were particularly at risk for attention problems. This may be an example of the principle that an accumulation of risk factors is especially harmful [25,55]. The risk seems to be equal across age and gender, as no interaction effects were found on these variables.

Methodological considerations

As Young-HUNT data were collected during school hours, the adolescent sample is fairly representative of adolescents in the county, with most non-response resulting from sick leave. Parental response rates were lower. Although people who are struggling with many problems at once, or with very severe problems, seem to be underrepresented in population surveys [56], alcohol use only moderately predicts non-participation in the HUNT study [57]. In addition, simulations have shown that associations between variables are only moderately weakened by high rates of selective non-response [56]. We therefore believe that all consumption groups are adequately represented in the sample, and that it is suited for studying alcohol use within the general population.

Alcohol consumption is usually underreported in population studies [58]. If this underreporting changes the ranking of individuals, misclassification occurs. However, the alcohol consumption measure showed good reliability, with consistent scores over a long period (11 year test-retest correlation was 0.63). The prevalence of abuse in this study was also lower than usually reported [2], and due to the representativeness of the sample [57] and the strict inclusion criteria for the abuse groups, the large majority of people classified as abusers are likely to be true cases. False negatives, however, can lead to an underestimation of the number of exposed adolescents.

A strength in our study was that mothers and fathers reported their alcohol use and mental distress independently, thereby avoiding inflated effect sizes due to single responders reporting on all measures. There may, however, be correlated errors between measures reported by the same person. Since this was a general health study covering a large number of topics, respondents were not aware of the purpose of the alcohol questions, which has probably also reduced the risk of response bias.

We did not detect any confounding by comorbid parental disorders, perhaps because we only measured internalizing symptoms in the parents. It may be that parental externalizing behaviour or antisocial personality characteristics in reality confound or mediate the effects of parental alcohol abuse [7]. However, there were no data available on parental psychopathology besides of internalizing symptoms. In addition, as this study is cross-sectional, we cannot conclude on causal mechanisms or persistence of the problems. The inclusion of a missing category was necessary to avoid excluding many problem drinkers whose spouses did not participate. This implies a not fully complete control of mothers' and fathers' unique contributions to school adjustment.

Conclusions

In spite of the mentioned limitations, we were able to study a representative sample of adolescent children of people with drinking problems, with independent reports from both parents and adolescents. More research is needed to investigate the specific effects of mothers' and fathers' drinking, causal mechanisms, reasons why child report of parental drinking appears to be more highly correlated with maladjustment than parental report, and factors that influence abstention.

Parental alcohol abuse is an independent risk factor for attention and conduct problems at school, which is not fully mediated by adolescent mental distress. While the association between parent-reported drinking and school adjustment seems to be modest when alcohol abuse occurs without comorbid disorders, witnessing the parents drunk was a stronger predictor for poor adjustment. The association between school adjustment and both parents' alcohol use seem to be mediated by seeing the parents drunk. We cannot exclude that direct exposure to drunken parents partially causes the problems. Maternal drinking may be worse for children than paternal drinking, and maternal drinking may have an effect partially mediated by adolescent mental distress. Only the externalizing dimensions were associated with parental alcohol abuse. Despite more attention and conduct problems, children of alcohol abusers enjoy school as much as other children.

Acknowledgements

The Nord-Trøndelag Health Study (The HUNT Study) is a collaboration between HUNT Research Centre (Faculty of Medicine, Norwegian University of Science and Technology, NTNU), the Nord-Trøndelag County Council and the Norwegian Institute of Public Health. This work was supported by grants from the Research Council of Norway, and forms part of a doctoral thesis to be submitted to the Department of Psychology, University of Oslo.

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Authors' contributions

FAT is mainly responsible for the design, analyses and drafting of the manuscript. KR contributed to the methodological design and analyses. HA contributed to the analyses. ER supervised the methodology and performed the factor analysis. KT participated in designing the questionnaires, acquiring data, and contributed to the design and analyses. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

Received: 21 February 2011 Accepted: 19 September 2011
Published: 19 September 2011

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Pre-publication history
The pre-publication history for this paper can be accessed here:
http://www.biomedcentral.com/1471-2458/11/706/prepub

doi:10.1186/1471-2458-11-706
Cite this article as: Torvik *et al.*: Parental alcohol use and adolescent school adjustment in the general population: Results from the HUNT study. *BMC Public Health* 2011 **11**:706.

PAPER 3

Torvik, F. A., Røysamb, E., Gustavson, K., Idstad, M., & Tambs, K. Discordant and concordant alcohol use in spouses as predictors of marital dissolution in the general population: results from the hunt study. Revised version in press in *Alcoholism: Clinical and Experimental research.*

DISCORDANT AND CONCORDANT ALCOHOL USE IN SPOUSES AS PREDICTORS OF MARITAL DISSOLUTION IN THE GENERAL POPULATION: RESULTS FROM THE HUNT STUDY

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ABSTRACT

Background: Being married is associated with a range of positive health effects. Previous studies have demonstrated that heavy alcohol use is a predictor of divorce. There is, however, a lack of studies with prospective data from both spouses, so the effects of concordant vs. discordant drinking in couples are unknown. Concordant drinking may lead to increased divorce rates because the malignant effects of heavy drinking may be experienced in double doses; alternatively it may lead to marital stability, due to partner compatibility. **Methods:** All inhabitants in a Norwegian county were invited to participate in a health study. Among these, we identified 19,977 married couples where both spouses participated. Respondents provided information on alcohol use, mental distress, and more. Survival analysis was applied to study the risk for divorce over the next 15 years. Demographics and mental distress were used as covariates. **Results:** Heavy drinking among men (hazard ratio, HR = 1.35) and women (HR = 1.38) affected the risk of future marital dissolution (reference group "light drinkers"). The hazard ratio for divorce was 1.46 when only the husband was a heavy drinker, and it was 2.27 when only the wife was a heavy drinker. Moreover, there were strong interaction effects: concordant abstainers (HR = 0.40) and concordant heavy drinkers (HR = 0.48) had lower risks of divorce compared to the risk expected from combining the main effects. Nevertheless, couples with two heavy drinkers (HR = 1.58) had higher risk of divorce than couples with two light drinkers. **Conclusion:** This study demonstrated that both the level of alcohol use and compatibility in alcohol use were important predictors of marital dissolution. Compatibility in alcohol use appears to be important for marital stability.

Keywords: alcohol; concordance; discordance; divorce; marital dissolution

INTRODUCTION

Being married is associated with a range of positive health outcomes (Hemminki and Li, 2003; Amato and James, 2010). This is partly due to selection of healthy people into marriage, and partly due to positive health effects of being married (Amato and James, 2010). On the other hand, divorce is a stressful experience with a risk of negative long term effects on the former spouses (Johnson and Wu, 2002; Brockmann and Klein, 2004; Amato and James, 2010) and their children (Størksen et al., 2005, 2006; Thompson et al., 2008; Amato and James, 2010). While people in poor quality marriages become happier if they divorce (Hawkins and Booth, 2005; Gardner and Oswald, 2006; Amato and Hohmann-Marriott, 2007), approximately half of the couples that underwent divorces were not highly distressed prior to the divorce (Amato and Hohmann-Marriott, 2007). After a strong increase, Western divorce rates now seem to have stabilized at a high level (Amato and James, 2010). Projected divorce rate estimates now suggest that a little less than half of all new marriages will end in divorce in countries like Norway (Statistics Norway, 2011) and the UK (Wilson and Smallwood, 2008). Given its high prevalence and potential harm, it is important to identify factors that affect the risk of divorce.

Divorced individuals are known to drink more heavily than their married counterparts (Leonard and Rothbard, 1999; Power et al., 1999; Lee et al., 2010). This may be partly due to a "selection out of marriage", i.e., heavy drinkers are more likely to become divorced, and partly due to a "transition out of marriage", i.e., increased drinking associated with the divorce and return to a "single" lifestyle (Leonard and Rothbard, 1999; Waldron et al., 2011).

Heavy alcohol use has repeatedly been found to be an independent risk factor for later divorce (Ostermann et al., 2005; Collins et al., 2007). For example, Waldron et al. (2011) found a 2.5 fold increase in separation rates among individuals with alcohol dependence. Some of the effect was, however, attributable to other characteristics individuals that abused

alcohol. Alcohol or drug use is the third most commonly reported reason for divorce in the US, after infidelity and incompatibility (Amato and Previti, 2003). However, one prospective British study did not find evidence of any strong selection out of marriage effects (Power et al., 1999). Several mechanisms may explain increased divorce rates among heavy drinkers (Ostermann et al., 2005). The most cited explanation is that excessive alcohol use interferes with marital quality and satisfaction. For example, it may increase spousal conflicts or disrupt daily tasks and functioning (Zweben, 1986; Leadley et al., 2000; Marshal, 2003; Kearns-Bodkin and Leonard, 2005; Collins et al., 2007). This can in turn increase the risk of divorce (Karney and Bradbury, 1995). One cannot, however, rule out that some of these effects are due to unmeasured third-factors, like personality traits, attitudes, religiosity, or initial marital satisfaction.

Concordant heavy drinking in spouses has been studied less than heavy drinking in one spouse (Marshal, 2003; Ostermann et al., 2005). Because alcohol use in one spouse increases the risk of divorce, one might expect that concordant heavy drinking create a higher divorce risk, due to the doubling of malignant factors (Marshal, 2003). One study that did not focus directly on divorce (Haber and Jacob, 1997) found that concordant heavy drinking couples indeed experienced maladaptive marital outcomes, like more negativity and less congeniality.

Other studies, however, indicate that a substantial part of the stress (and detrimental effects of alcohol use) stems from *differences* in alcohol use between spouses, rather than alcohol use per se. Couples concordant in heavy drinking are likely to have similar behaviours and attitudes towards drinking; therefore they may be less divided than couples with one heavy drinker, particularly if they spend time together when drinking (Haber and Jacob, 1997; Roberts and Leonard, 1998; Marshal, 2003; Homish and Leonard, 2005). Consequently, these couples may experience less stress and have a lower risk of divorce. More generally, having

similar personalities has been found to promote relationship quality (Gonzaga et al., 2007). In addition, couples concordant in heavy drinking may believe they have less to gain by divorcing, even if they feel distressed (Pinsof, 2002).

Few studies have investigated divorce with alcohol data from both spouses. A notable exception is Ostermann et al. (2005), who followed 4,589 married couples aged 51-61 years over a period of 8 years. Discordant alcohol use was found to be more predictive of future divorce than the level of alcohol use. Couples with one heavy drinker had the highest divorce rates; couples with two abstainers, two heavy drinkers, or two light drinkers had similar divorce rates. Discordant drinking couples have also been found to have lower marital quality than couples where both or none were drinking heavily (Roberts and Leonard, 1998; Leadley et al., 2000; Mudar et al., 2001; Homish and Leonard, 2007). Also, husband-to-wife violence is less common if both spouses drink heavily than if only the husband does (Quigley and Leonard, 2000). Thus, divorce risk may be lower in couples with two heavy drinkers compared to couples with one heavy drinker.

From previous research it may be suspected that alcohol use increases the risk of future divorce, but similar alcohol use between spouses reduce the risk of relationship dissatisfaction, and thus the risk of divorce. The present study investigates how alcohol use might predict selection out of marriage, i.e. divorce, in a large general population sample of married couples. Individuals of different ages, different levels of drinking, from abstainers to heavy drinkers, were included. The study has three aims, namely to investigate (1) to what degree alcohol use in husbands and wives is prospectively predictive of marital dissolution; (2) whether discordant and concordant alcohol use is associated with marital dissolution; and (3) to what degree the aforementioned associations may be attributed to other characteristics of the spouses, i.e. demographical background or mental distress.

MATERIALS AND METHODS

Sample and design

This study combined longitudinal demographic data from government registries with cross-sectional data from the Nord-Trøndelag Health Study (HUNT 1). Between 1984 and 1986, the entire population of Nord-Trøndelag county, Norway, aged 20 years or older, was invited to participate in HUNT 1. This screening study consisted of one health examination and two questionnaires. The first questionnaire was enclosed with the invitation letter and returned at the examination site; the second questionnaire was taken home from the examination site and returned by prepaid mail. The questionnaires included a battery of self-report measures, including alcohol use.

In total, 85,427 individuals were invited to participate in the HUNT 1 study. Of these 77,230 (90.4%) responded to the first questionnaire and 63,943 (74.9%) to both questionnaires. Among those invited, there were 27,307 heterosexual couples registered as married at the time of the study. Of these, there were 19,977 couples (73.2%) in which both spouses returned both questionnaires. These constitute the sample of this study. The husbands had an average age of 51.0 years (SD=15.2) and the wives had an average age of 47.9 years (SD=15.0) at baseline.

The included couples were followed through governmental registries until 2000, for an average of 15.0 years. More details on the HUNT study are described elsewhere (Holmen et al., 1990) and are available at the HUNT website: www.ntnu.edu/hunt.

Measures

Registry data

Data on sex, age, education, income, and marital status were collected from population registries administered by Statistics Norway.

Marriage and marital dissolution. Statistics Norway provided annual information on individuals' marital status, the personal identification number of their spouse, and whether and when they divorced or separated. Marriages were considered dissolved when, at any time, the spouses were registered as separated or divorced.

Age. The ages of both partners were used as linear covariates.

Education. The highest completed education was obtained from the national public registry data made available by Statistics Norway. Registry data from 1985 was valid for 98.7% of the participants. Education in 1990 or 1980 was used for the remainder of participants. Education was coded into four groups: Elementary or middle school (men: 39.0%; women: 42.6%), some secondary education (men: 26.5%; women 38.9%), completed secondary education (men: 22.2%; women 8.1%), and university or college (men: 12.3%; women 10.5%).

Income. Income was provided by Statistics Norway for the years 1980, 1984, 1985, and 1990, and was adjusted for inflation. Income from the year closest to the year of participation was used, i.e. 1984 or 1985. For a few respondents (0.02%), income from 1984 and 1985 was missing, and the average of income in 1980 and 1990 was used instead.

Questionnaire data

Alcohol use. The alcohol consumption index was based on three questions related to alcohol use: “How often did you drink alcohol over the last 14 days?” (total abstainer, 0 times, 1-4 times, 5-10 times, 10 times or more), “If you drank alcohol during the past 14 days, did it make you feel influenced by alcohol on any occasion?”, (no, yes), and “Have there been periods in your life during which you have drunk excessively or at least a bit too much?” (no, not sure, yes). A few “impossible” responses were recoded (for example, people who claimed that they had been influenced, but that they had not drunk alcohol were given one extra point on frequency). Responses on these three items were considered to be expressions of an underlying factor. In accordance with previous studies on the same material (Hagen et al., 2002, 2006), one factor was extracted from a factor analysis, based on data from all participants in the HUNT 1 study (married and unmarried). This single factor explained 55% of the variance in the responses.

Based on their factor score relative to the population, responders were coded into four drinking categories: abstainers, light drinkers, moderate drinkers, and heavy drinkers. As abstainers differ from people with very low consumption (Skogen et al., 2009), people who indicated that they were abstainers and who also reported to have had no problems with alcohol earlier in life (6.3% of men; 14.4% of women) were coded into a separate group. Responders that scored between the 65th and 90th percentile of the entire population (10.7% of married men; 4.1% of married women) were coded as “moderate drinkers”, while the top 10% in the population were coded as “heavy drinkers” (13.5% of men; 2.8% of women). The remaining responders were labelled “light drinkers”, and these were used as the reference group (69.6% of men; 78.8% of women).

Men in the heavy drinking group drank alcohol on average 2.8 days per week, 90.6% had been drunk during the last two weeks, and 86.6% admitted to have or might have been drinking too much in periods of life. Women classified as heavy drinkers drank alcohol on

average 2.9 days per week, 91.2% had been drunk during the last two weeks, and 80.3% reported they have or might have drunk too much in periods of life. Actual consumption is likely to be considerably higher, as underreporting is common (Rehm, 1998).

Mental distress. The anxiety and depression index (ADI-12) consisted of 12 items. Weights for inclusion in a weighted sum were assigned by Tambs and Moum (1993) to optimize correlation (r = 0.82) with the Hopkins Symptom Checklist (SCL-25) (Derogatis et al., 1974). The three highest loading items were "Over the last month, have you suffered from nervousness (irritability, anxiety, tension or restlessness)?", "Do you mostly feel strong and fit, or tired and worn out?", and "Do you often feel lonely?" The ADI-12 had a theta reliability of 0.83 (Tambs and Moum, 1993), and has been used in a range of studies (Hildrum et al., 2008; Idstad et al., 2010). In this study, it was used as a linear covariate.

Employment. Employment status was assigned to four categories: working full time, working part time, working at home, or not working. A second question separated students and pensioners from the involuntarily unemployed.

Children. Respondents indicated whether they were living with children aged 5 years or younger, 5 to 15 years old, or 15 or older. When only one of the spouses responded or indicated that they were living with children, the responses of that spouse were used. The answers were entered as three dummy variables.

Missing values

After treating data as described above, the data from governmental registries had no missing values. Multiple imputation with 10 repetitions was applied to avoid excluding couples with

partial responses to the questionnaires. Multiple imputation produces multiple copies of the dataset, each with random variation around the maximum likelihood estimate; this avoids deflation of the standard errors. Thus, data from 1,322 couples that had incomplete questionnaire responses were imputed, and the total sample included 19,977 couples. When multiple imputation is appropriately conducted claimed, it is reported to provide more accurate estimates than listwise deletion (Graham, 2009), because multiple imputation allows preserving all valid data. In the present analyses, however, we found negligible differences in results between pooled multiple imputed data and data with listwise deletion of incomplete observations: the hazard ratios (HRs) varied at most by ±0.04. Only results from multiple imputed data are reported.

Statistical analyses

The couples were considered the units of analysis. The relative hazards of marital dissolution were studied by survival analysis (time to an event analysis). An observation was registered as right censored before the end of the study when either of the spouses died. Predictors of divorce were analysed with multivariate Cox proportional hazards regression models. Several such analyses were conducted: First, the main effects of alcohol use among husbands and wives were analysed. Second, the interaction term between husbands and wives were included in the analysis. These analyses were run three times: first adjusted for age only, then for age and other demographic variables, and then for mental distress as well. Finally, all combinations of husbands' and wives' drinking habits were entered as separate categories, adjusted for demographics, to estimate the hazard ratios for couples within each group.

Software. All statistical analyses were run in SPSS 19.0 and R 2.11.1.

Ethics

The data matching between spouses was carried out by the governmental agency Statistics Norway, using personal birth identity numbers assigned to every Norwegian citizen. All person-identifiable data were deleted before the data were returned to the researchers. The Norwegian Data Inspectorate and the Regional Ethics Committee approved the study.

RESULTS

Descriptive results

During the follow-up time from 1984-1986 to 2000, 7.6% of couples were registered as divorced or separated. This corresponds to a marital dissolution rate of 5.1 per 1,000 couples per year. Alcohol use was correlated between spouses ($r = 0.43$).

Table 1 summarizes the bivariate distribution of couples with complete responses in 4×4 possible drinking categories, and the frequency of marital dissolution within each category. Marital dissolution was considerably more common among couples with high rates of alcohol consumption. However, the rate of marital dissolution was not highest among couples with two heavy drinkers.

---------- Insert Table 1 approximately here ----------

Main effects of alcohol use

Next, associations were investigated with multivariate analyses. Table 2 summarises the results of the survival analyses (Cox regressions). The upper part shows the main effects of drinking on marital dissolution; values represent hazard ratios. The association between alcohol use and marital dissolution was initially adjusted for age (first column). Heavy

drinking of the husband or wife predicted an increased risk of future marital dissolution. The second column in the upper part of Table 2 shows the hazard ratios adjusted for the following potentially confounding demographic variables: age, education, income, employment, and age of children. The results are similar to those from the first model, with somewhat lower effect sizes. In the third column, the results were additionally adjusted for mental distress. Effect sizes were somewhat further reduced, and the effect of the wives' drinking was no longer statistically significant.

---------- Insert Table 2 approximately here ----------

Interactions between husband and wife alcohol consumption

Adding the interaction term between male and female drinking to the analysis altered the results considerably. Because all other drinking patterns are partialled out by the interaction terms, the main effects shown in the lower part of Table 2 reflect effects of either the husband's or the wife's alcohol use compared to when the other partner is a light drinker (discordant drinkers). The interaction results show the hazard ratios compared to what could be expected from the combination of the main effects. Thus, to obtain hazard ratios for divorce due to any combination of husband and wife drinking, one must multiply the two main effects and the corresponding interaction effect. For example, among concordant heavy drinkers the demography-adjusted hazard ratio of divorce would be $1.46 \times 2.27 \times 0.48 = 1.58$ compared to two light drinkers.

Moderate or heavy drinking in one spouse combined with light drinking in the other spouse had large effects. In addition, there are substantial interaction effects between the husbands' and wives' drinking behaviour. Concordant abstention, concordant heavy drinking, and the combination of moderate drinking in husbands and heavy drinking in wives reduced

the risk of divorce, compared to what could be expected from the combined main effects. Among concordant heavy drinkers and concordant abstainers, the risk was less than half of that expected if each main effect were independent of the other. The hazard ratios were somewhat reduced after being adjusting for demographics and mental distress.

All drinking combinations as separate categories

To provide more readily interpretable results for specific combinations of drinking, the demographics-adjusted analysis was rerun with all combinations of drinking among husbands and wives as separate drinking categories. The results are displayed in Table 3. Compared to couples concordant in light drinking, couples concordant in abstention had a lower risk of marital dissolution, while couples concordant in heavy drinking showed elevated risks for marital dissolution.

The highest hazard ratio was seen in couples where the wife was a heavy drinker and the husband a light drinker. Concordant heavy drinking couples had approximately the same divorce risk as couples where only the husband drinks heavily, and they appear to have a lower risk of divorce than couples where only the wife drinks heavily.

---------- Insert Table 3 approximately here ----------

DISCUSSION

Alcohol use among men and women was associated with an elevated risk of future marital dissolution, whether both or only one partner drank excessively. The effects of two heavy drinking spouses did not add together to further increase the risk of divorce. To the contrary, the risk of marital dissolution for both concordant abstainers and concordant heavy drinkers was considerably lower than that expected from combining the main effects of husband and

wife drinking. The divorce risk for couples with two heavy drinkers was similar to that for couples where only the husband drank heavily, and appeared to be lower than that for couples where only the wife drank heavily. Heavy drinking among wives seemed to increase the risk of divorce more than drinking among husbands. Alcohol use remained an important predictor of marital dissolution even after controlling for demography and mental distress. Although drinking was correlated between partners in our study, a majority of heavy drinkers did not have a spouse that drank heavily.

Alcohol use increased the probability of divorce. That finding is consistent with most other studies investigating drinking as a factor for selection out of marriage (Amato and Previti, 2003; Ostermann et al., 2005; Collins et al., 2007; Waldron et al., 2011), and may suggest that alcohol use indeed has a negative effect on relationship functioning and compromise the ability or wish to remain married (Marshal, 2003; Kearns-Bodkin and Leonard, 2005; Collins et al., 2007).

The finding that similar alcohol consumption protected against divorce confirms findings in a previous study on divorce (Ostermann et al., 2005) and is consistent with findings on marital satisfaction and related outcomes (Leadley et al., 2000; Mudar et al., 2001; Homish and Leonard, 2007). This effect of concordant alcohol use is sometimes considered inconsistent with individual alcohol use increasing the risk of divorce (Collins et al., 2007). Our results show that both notions are valid. Unlike Ostermann et al. (2005), we provided empirical support within the same study that the risk of divorce was associated with both discordance in alcohol use and the level of alcohol use. The difference between studies may be due to our larger sample size.

The results suggest that alcohol use does not merely have a dose-response effect on the probability of divorce. One must therefore search explanations in the characteristics of the

couple rather than only within each individual. There are several potential explanations for the interactions between the drinking patterns of the husbands and wives:

One explanation may be related to compatibility. It is well known that most people prefer partners that are similar to themselves (Gonzaga et al., 2007). Incompatibility is the second most commonly stated reasons for divorce, after infidelity (Amato and Previti, 2003). This fits our results well. Differences in alcohol use are likely to lead to stress and marital dissatisfaction. Compared to discordant drinkers, concordant drinkers are more likely to have similar attitudes towards alcohol, participate in the same social circles, spend more time together, and fight less over alcohol.

Another explanation may be related to the relative advantage of remaining married compared to separation. People who decide to divorce have judged that staying in the relationship is less advantageous than leaving. Individuals in poor quality relationships are likely to become happier after divorce (Hawkins and Booth, 2005; Amato and Hohmann-Marriott, 2007); thus divorce could should not only be considered to reflect a lack of ability to remain together, but also of ability to leave a poor relationship (Pinsof, 2002). For spouses discordant with heavy drinking, there may be a large gap between the current relationship quality and the expectation of what may be achievable. Thus, leaving a partner may be perceived as a chance to find a new partner that drinks less, to have a more structured every-day life, to protect the children and so on. Among concordant heavy drinkers, however, continuing a marriage may be considered better than life after a divorce. It could either be because the spouses are highly satisfied due to similar personalities and life styles, or it may be that they settle for a level of relationship satisfaction that is less than ideal. In the latter case, heavy drinkers may fear difficulties in finding a new partner, due to unattractiveness, they may fear loneliness, or they may have lost the belief that life can improve. In that case, heavy drinking may harm relationships more than that reflected in the divorce rate. Although

correlated, some studies have pointed out that different factors predict marital satisfaction and marital dissolution (Rogge and Bradbury, 1999).

The lowered risk for divorce among concordant abstainers may be due to the same reasons as those given for heavy drinkers, i.e. compatibility and relative satisfaction. In addition, several religious faiths oppose divorce and promote teetotalism, and abstainers have been found to be more religious than light drinkers (Michalak et al., 2007; Spein et al., 2011). Moreover, because abstainers have smaller social networks than social drinkers (Graham, 1998), the partners may be more interdependent.

Some of the effects associated with drinking can be attributed to demographical differences and mental distress. Nevertheless, some of these variables may constitute examples of statistical over-controlling. We believe it is realistic that alcohol use could affect mental distress or employment; thus some of the effects of alcohol on relationship dissolution could be mediated by these variables. Our measures of these variables were cross-sectional; thus we could not test whether these variables were confounders or mediators.

Strengths and limitations

This study has several strengths. First, the large sample size makes it possible to draw precise statistical inferences, even when the sample was divided into subgroups. Second, alcohol consumption data were available for both spouses: this provided a unique opportunity to study the effects of concordant and discordant alcohol use. Third, a broad range of control variables were available; this ensured that the observed effects were not due to confounding by demographic conditions or mental distress. Fourth, the governmental registries to which the survey data were linked provided high quality data and ensured valid outcome measures with no attrition.

Some limitations must be mentioned. First, the alcohol measures are self-reported; therefore under-reporting and misclassification may have occurred. This would most likely lead to underestimated effect sizes. Second, heavy drinkers may be underrepresented in surveys like this one. However, the response rate at baseline was high; moreover, alcohol use was found to be only a modest predictor of non-response in the HUNT studies (Torvik et al., 2011). A little non-response may not critically affect association estimates (Knudsen et al., 2010). Third, the questionnaire data were cross-sectional, and the study was observational; therefore, we could not draw any conclusions about causality. Although we included many covariates, the results may have been affected by unmeasured third-variables related to divorce, and alcohol use or differences in alcohol use, for example personality, impulse control, religiosity, or ability to find a compatible partner. Fourth, we had no data on relationship satisfaction and could not study its role in the process of marital breakdown. Fifth, it is possible that poor marriages cause divergent alcohol use, rather than the other way around. Generally, spouses converge in alcohol use over time (Ask et al., 2011). Thus, a lack of convergence might be a symptom of poor marital functioning. Finally, the reasons for divorce may vary among countries. For example, educational level predicts divorce in opposite directions in different countries (Amato and James, 2010). It is unknown to what degree culture moderates the effects of alcohol use on divorce.

CONCLUSION

Alcohol use had strong effects on selection out of marriage. Both low alcohol use and compatible alcohol use protected against divorce. Future research in this field should consider couples rather than individuals, investigate processes accounting for the selection of heavy drinkers out of marriage, and compare heavy drinkers that divorce to those that remain married regarding their future alcohol use and life satisfaction. The results of this study

underline the importance of considering both partners in research and evaluations of alcohol effects on couples. Compatibility in alcohol use appears to be important for marital outcome.

ACKNOWLEDGEMENTS

The Nord-Trøndelag Health Study (The HUNT Study) is a collaboration between the HUNT Research Centre (Faculty of Medicine, Norwegian University of Science and Technology, NTNU), the Nord-Trøndelag County Council and the Norwegian Institute of Public Health. This work was supported by grants from the Research Council of Norway, and forms part of a doctoral thesis to be submitted to the Department of Psychology, University of Oslo.

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TABLE LEGENDS

Table 1. Bivariate distribution of drinking behaviours at baseline and the per cent marital dissolution within each drinking category (no imputed data).

Table 2. Hazard ratios (HR) for marital dissolution by alcohol use. Compared to light drinking. Results for covariates are not shown.

Table 3. Main effects (HR) for all combinations of husband and wife drinking categories, compared to concordant light drinkers. All values are adjusted for demography.

Table 1. Bivariate distribution of drinking behaviours at baseline and the per cent marital dissolution within each drinking category (no imputed data).

Husband drinking	N (% marital dissolution)				
	Wife drinking				
	Abstainer	Light	Moderate	Heavy	Total
Abstainer	921 (1.7)	234 (5.6)	1 (0)	1 (0)	1,157 (2.5)
Light	1,570 (2.6)	11,240 (6.3)	206 (16.0)	168 (20.2)	1,3184 (6.2)
Medium	66 (9.1)	1,559 (11.4)	334 (17.4)	111 (12.6)	2,070 (12.3)
Heavy	131 (5.3)	1,957 (13.1)	238 (18.1)	252 (16.3)	2,578 (13.5)
Total	2,688 (2.6)	1,4990 (7.7)	779 (17.2)	532 (16.7)	18,989 (7.6)

Table 2. Hazard ratios (HR) for marital dissolution by alcohol use. Compared to light drinking.

Results for covariates are not shown.

	Adjusted for age			Adjusted for demography[1]			Adjusted for mental distress[2]		
	HR	p	95% C.I.	HR	p	95% C.I.	HR	p	95% C.I.
MAIN EFFECTS									
Husband alcohol use		<.001			<.001			.002	
Abstainer (1)	0.67	.059	0.44 – 1.02	0.71	.109	0.47 – 1.08	0.72	.118	0.47 – 1.09
Moderate (2)	1.00	.953	0.87 – 1.16	1.00	.998	0.86 – 1.16	1.04	.626	0.89 – 1.20
Heavy (3)	1.42	<.001	1.25 – 1.62	1.35	<.001	1.18 – 1.53	1.25	.001	1.10 – 1.43
Wife alcohol use		.001			.011			.127	
Abstainer (1)	0.85	.249	0.65 – 1.12	0.89	.402	0.68 – 1.17	0.86	.274	0.66 – 1.13
Moderate (2)	1.23	.026	1.02 – 1.48	1.19	.069	0.99 – 1.43	1.14	.171	0.95 – 1.37
Heavy (3)	1.46	.001	1.17 – 1.83	1.38	.005	1.10 – 1.72	1.22	.088	0.97 – 1.52
WITH INTERACTION									
Husband alcohol use		<.001			<.001			<.001	
Abstainer (1)	1.24	.434	0.72 – 2.15	1.27	.396	0.73 – 2.20	1.21	.496	0.70 – 2.10
Moderate (2)	1.03	.763	0.87 – 1.21	1.02	.774	0.87 – 1.21	1.06	.474	0.90 – 1.26
Heavy (3)	1.56	<.001	1.35 – 1.80	1.46	<.001	1.26 – 1.69	1.36	<.001	1.18 – 1.57
Wife alcohol use		<.001			<.001			<.001	
Abstainer (1)	0.93	.623	0.68 – 1.26	0.96	.788	0.70 – 1.31	0.93	.672	0.68 – 1.28
Moderate (2)	1.49	.026	1.05 – 2.11	1.41	.057	0.99 – 2.00	1.33	.108	0.94 – 1.90
Heavy (3)	2.41	<.001	1.71 – 3.41	2.27	<.001	1.61 – 3.22	2.00	<.001	1.41 – 2.84
Interaction (husband*wife)[3]		.012			.022			.036	
1 1	0.37	.015	0.17 – 0.83	0.40	.023	0.18 – 0.88	0.43	.036	0.19 – 0.95
1 2	-	-	-	-	-	-	-	-	-
1 3	-	-	-	-	-	-	-	-	-
2 1	1.43	.425	0.60 – 3.40	1.31	.545	0.55 – 3.13	1.31	.544	0.55 – 3.14
2 2	0.88	.585	0.56 – 1.39	0.89	.611	0.56 – 1.41	0.89	.632	0.56 – 1.42
2 3	0.47	.022	0.25 – 0.90	0.46	.019	0.24 – 0.88	0.47	.022	0.25 – 0.90
3 1	1.09	.828	0.49 – 2.46	1.17	.698	0.52 – 2.65	0.99	.974	0.44 – 2.23
3 2	0.66	.082	0.41 – 1.05	0.69	.119	0.43 – 1.10	0.70	.140	0.43 – 1.12
3 3	0.47	.002	0.29 – 0.76	0.48	.002	0.29 – 0.77	0.47	.002	0.29 – 0.76

Notes:

1. Demography includes: age, income, education, employment status, age of children

2. Also adjusted for demography, see comment 1.

3. Interactions 1 2 and 1 3 are not estimated due to N=1 in both cases.

Table 3. Main effects (HR) for all combinations of husband and wife drinking categories, compared to concordant light drinkers. All values are adjusted for demography.

Husband drinking	Wife drinking			
	Abstainer	Light	Moderate	Heavy
Abstainer	0.49 **	1.27	-	-
Light	0.96	Ref.	1.41	2.27 ***
Moderate	1.29	1.03	1.28	1.08
Heavy	1.64	1.46 ***	1.41 *	1.58 **

Notes: * = p < 0.05; ** = p < 0.01; *** = p < 0.001.

APPENDICES

APPENDIX 1

QUESTIONNAIRE 1, HUNT 1

MELDING OM SKJERMBILDEFOTOGRAFERING OG UNDERSØKELSE AV BLODTRYKK OG BLODSUKKER

Skjermbildefotograferingen kommer nå til ditt distrikt. Denne gangen inngår fotograferingen i en større helseundersøkelse, og vi viser til orienteringen som er gitt i den vedlagte brosjyre.

Tid og sted for frammøte vil du finne nedenfor.

Vennligst fyll ut spørreskjemaet på baksiden og ta det med til undersøkelsen. Ta også med skjermbildebevis, tuberkulinkort eller helsebok om du har.

Det er viktig at du møter fram selv om du nylig har fått kontrollert blodtrykk eller blodsukker, og selv om du er under behandling for høyt blodtrykk eller for sukkersyke.

Med vennlig hilsen

Statens skjermbildefotografering

Postboks 8155 Dep, Oslo 1

Fylkeslegen • Helserådet • Statens Institutt For Folkehelse

Født dato | Personnr. | Kommune | Kretsnr.

Møtested | Kjønn | Første bokstav etternavn Dag og dato | Klokkeslett

H.[14] V.[18] SBT_1[21] DBT_1[24] PULS[27] SBT_2[30] DBT_2[33] SYKEPL[35]

TID[36] GLUC$_1$[39] GLUC$_2$[42] GLUC$_3$[45] HG[46] BT[47] P.[48] Ø.M.[49]

A. Hvordan er helsa di for tida?
(Sett kryss i bare *en* rute.)

Dårlig	50	1
Ikke helt god		2
God		3
Svært god		4

B. Har du i løpet av de siste 12 måneder vært hos?

	JA	NEI
Almenpraktiserende lege (distriktslege, privatpraktiserende lege,turnuskandidat)	51	
Bedriftslege	52	
Militærlege	53	
Lege ved sykehus (uten at du var innlagt)	54	
Annen lege	55	

C. Har du vært innlagt i sykehus de siste 5 åra? 56

D. Bruker du, eller har du brukt, medisin for høyt blodtrykk? 57

E. Har du eller har du hatt noen av disse sykdommene?

	JA	NEI
Sukkersyke	58	
Hjerteinfarkt	59	
Angina pectoris (hjertekrampe)	60	
Hjerneslag eller hjerneblødning	61	

F. Har du noen langvarig sykdom, skade eller lidelse av fysisk eller psykisk art som nedsetter dine funksjoner i ditt daglige liv? (Med langvarig menes at det har vart, eller vil vare i minst ett år.) 62

Hvis «JA», vil du si at dine funksjoner er litt, middels eller mye nedsatt?

	LITT	MIDDELS	MYE
Er bevegelseshemmet	63		
Har nedsatt syn	64		
Har nedsatt hørsel	65		
Hemmet pga. kroppslig sykdom	66		
Hemmet pga. psykiske plager	67		

G. Har du noen søsken? (Nålevende eller døde) 68

Hvis «JA», har en eller flere av dem hatt noen av disse sykdommene?

	JA	NEI	VET IKKE
Sukkersyke	69		
Hjerteinfarkt/hjertekrampe	70		
Forhøyet blodtrykk	71		

H. Når du tenker på hvordan du har det for tida, er du stort sett fornøyd med tilværelsen, eller er du stort sett misfornøyd?
(Sett kryss i bare *en* rute.)

Svært fornøyd	72	1
Meget fornøyd		2
Ganske fornøyd		3
Både/og		4
Nokså misfornøyd		5
Meget misfornøyd		6
Svært misfornøyd		7

SPØRSMÅL OM BLODTRYKKSMÅLINGEN I DEN VEDLAGTE BROSJYREN

	JA	NEI	VET IKKE
I. Er blodtrykket ditt målt noen gang før? 73 **Hvis «NEI», gå videre til spørsmål M**			

J. Hvilket år ble blodtrykket målt siste gang?

19 ☐☐ vet ikke..... 74

Skriv årstallet her (ca.)

K. Hvor ble blodtrykket målt siste gang?
(Sett kryss i bare *en* rute.)

Hos almenpraktiserende lege (distriktslege, privatpraktiserende lege, turnuskandidat	76	1
Hos bedriftslege		2
Hos militærlege		3
På sykehus		4
Hos annen lege		5
Vet ikke		6

L. Hva ble resultatet av målingen?
(Sett kryss i bare *en* rute.)

Jeg skulle begynne med eller fortsette med medisin for høyt blodtrykk	77	1
Jeg skulle komme til kontroll, men skulle *ikke* ta medisin		2
Jeg skulle *ikke* ta medisin og *ikke* komme til kontroll		3

M. Dersom denne helseundersøkelsen viser at du bør undersøkes nærmere: Hvilken almenpraktiserende lege ønsker du da å bli henvist til?

Skriv navnet på legen her

_____

Ingen spesiell lege.. 78

IKKE SKRIV HER

OM ARBEIDET DITT

N. Er du i arbeid for tida?
(Sett kryss i bare *en* rute.)

Ja, heltidsarbeid (utenom husarbeid)	81	1
Ja, deltidsarbeid (utenom husarbeid)		2
Ja, heltids husarbeid		3
Nei, ikke i arbeid		4

O. Hvis du ikke er i heltids arbeid, er det på grunn av:
(Sett kryss i bare *en* rute.)

Arbeidsløshet, permittering	82	1
Pensjon eller trygd		2
Utdanning eller militærtjeneste		3
Annet		4

HVIS DU ER I ARBEID, VENNLIGST SVAR PÅ DE NESTE TO SPØRSMÅLENE:

P. Er det mye stress og mas på arbeidet ditt?
(Sett kryss i bare *en* rute.)

Nei, ikke i det hele tatt	83	1
Sjelden		2
Ja, en god del		3
Ja, nesten hele tida		4

Q. Kan du sjøl bestemme hvordan arbeidet ditt skal legges opp? (Sett kryss i bare *en* rute)

Nei, ikke i det hele tatt	84	1
I liten grad		2
Ja, stort sett		3
Ja, det bestemmer jeg sjøl		4

APPENDIX 2

QUESTIONNAIRE 2, HUNT 1

Vi takker for frammøtet til undersøkelsen.

Vi vil også be deg være vennlig å fylle ut dette spørreskjemaet. Opplysninger vil bli brukt i et større forskningsarbeid om forhold som har betydning for helsen.

Svar etter beste skjønn. Kryss av for bare en av svar-mulighetene (dersom det ikke står nevnt noe annet). Det utfylte skjema returneres i vedlagte svarkonvolutt. Porto er betalt.

Alle opplysningene er underlagt streng taushetsplikt.

Med hilsen

Statens skjermbildefotografering
Fylkeslegen ● Helserådet ● Statens Institutt For Folkehelse
Institutt for anvendt sosialvitenskapelig forskning/
Institutt for samfunnsforskning

Til etikett

Navn: _____

Adr. : _____

_____

_____

Postnr. Postkontor

F.nr. : _____

MOSJON

Med mosjon mener vi at du f.eks. går tur, går på ski, svømmer eller driver trening/idrett.

Hvor ofte driver du mosjon?
(Ta et gjennomsnitt)

Aldri	12	1
Sjeldnere enn en gang i uka		2
En gang i uka		3
2–3 ganger i uka		4
Omtrent hver dag		5

Dersom du driver slik mosjon så ofte som en eller flere ganger i uka:
Hvor hardt mosjonerer du?
(Ta et gjennomsnitt)

Tar det rolig uten å bli andpusten eller svett	13	1
Tar det så hardt at jeg blir andpusten og svett		2
Tar meg nesten helt ut		3

Hvor lenge holder du på hver gang?
(Ta et gjennomsnitt)

Mindre enn 15 minutter	14	1
16–30 minutter		2
30 minutter–1 time		3
Mer enn 1 time		4

SALT

Hvor ofte bruker du salt kjøtt eller salt fisk/sild til middag?

Aldri, eller sjeldnere enn en gang i måneden	15	1
1–2 ganger i måneden		2
Opptil en gang i uka		3
Opptil to ganger i uka		4
Mer enn to ganger i uka		5

Hvor ofte pleier du å strø ekstra salt på middagsmaten?

Sjelden eller aldri	16	1
Av og til		2
Ofte		3
Alltid eller nesten alltid		4

RØYKEVANER

		JA	NEI
Røyker du daglig for tiden?	17		
Hvis du svarte «JA», røyker du DAGLIG for tiden:		JA	NEI
Sigaretter?	18		
Pipe?	19		
Sigarer (eller serutter/sigarillos)?	20		
Hvis du IKKE røyker SIGARETTER daglig for tiden: Har du røykt SIGARETTER daglig tidligere?	21	JA	NEI

Hvis du svarte «JA», hvor lenge er det siden du sluttet å røyke sigaretter daglig?

Mindre enn 3 måneder	22	1
3 måneder– 1 år		2
1–5 år		3
Mer enn 5 år		4

Hvis du røyker SIGARETTER daglig nå, eller har gjort det tidligere:

Hvor mange sigaretter røyker eller røykte du pr. dag? (Oppgi antall pr. dag medregnet håndrullede) ..... 23 Antall

Besvares av dem som røyker daglig nå eller har røykt daglig tidligere:
(Gjelder både sigarett-, pipe- og sigar-røykere)

Hvor gammel var du da du begynte å røyke daglig?	25	år
Hvor mange år tilsammen har du røykt daglig?	27	år

ALKOHOLBRUK

Hvor ofte har du drukket alkohol (øl, vin eller brennevin) de SISTE 14 DAGENE?

Jeg har ikke drukket alkohol, men er ikke totalavholdende	29	1
Jeg har drukket 1–4 ganger		2
Jeg har drukket 5–10 ganger		3
Jeg har drukket mer enn 10 ganger		4
Jeg er totalavholdende, drikker aldri alkohol		5

		JA	NEI
Dersom du har drukket alkohol de siste 14 dagene, har det ført til at du noen gang har følt deg beruset?	30		

Har det vært perioder i livet ditt da du har drukket for mye, eller i hvert fall i meste laget?

Nei	31	1
I tvil, kanskje		2
Ja		3

BOSITUASJONEN

Bor du alene eller sammen med andre?
Kryss av for de du bor sammen med. (Her kan du sette flere kryss.)

Bor alene	32	
Ektefelle eller samboer	33	
Foreldre eller svigerforeldre	34	
Andre voksne personer	35	
Barn under 5 år	36	
Barn 6–15 år	37	
Barn over 15 år	38	

Bor du fast i institusjon?
(sykehjem, aldershjem eller liknende) 39

JA | NEI

UTDANNINGEN

Hvilken utdanning har du fullført?
Oppgi bare høyest fullførte utdanning.

7-årig folkeskole eller kortere	40	1
Framhalds- eller fortsettelsesskole		2
9-årig grunnskole		3
Real- eller middelskole, grunnskolens 10. år		4
Ett- eller to-årig videregående skole		5
Artium, økonomisk gymnas eller almenfaglig retning i videregående skoler		6
Høyskole eller universitet, mindre enn 4 år		7
Høyskole eller universitet, 4 år eller mer		8

Har du fullført annen heldags utdanning, og i tilfelle i hvor mange år?

Skriv antall år her .... 41 — år

ARBEID

Hvis du er eller har vært i inntektsgivende arbeid, kan du angi hvilken av disse yrkesgruppene ditt yrke faller innenfor? (Hvis du ikke er i arbeid nå, svarer du ut fra det yrket du hadde sist.)

Hvis du har en ektefelle (eller samboer) som er i inntektsgivende arbeid nå, eller har vært det tidligere, angi tilsvarende hvilken yrkesgruppe han/hun tilhører. (Evt. angi om han/hun *ikke* har hatt inntektsgivende arbeid.)

		Deg selv	Ektefellen
Spesialarbeider, ufaglært arbeider	43, 44		1
Fagarbeider, håndverker, formann			2
Underordnet funksjonær (butikk, kontor, offentlige tjenester)			3
Fagfunksjonær (f.eks. sykepleier, tekniker, lærer)			4
Overordnet stilling i offentlig eller privat virksomhet			5
Gårdbruker eller skogeier			6
Fisker			7
Selvstendig i akademisk erverv (f.eks. tannlege, advokat)			8
Selvstendig næringsdrivende (Industi, transport, handel)			9
Har *ikke* hatt inntektsgivende arbeid (f.eks. pga. heltids husarbeid, studier, trygd)			0

Hvis du er i arbeid (gjelder også heltids husarbeid), **ber vi deg fylle ut de neste spørsmålene:**

Er arbeidet ditt så fysisk anstrengende at du ofte er sliten i kroppen etter en arbeidsdag?

Ja, nesten alltid	45	1
Ganske ofte		2
Ganske sjelden		3
Aldri, eller nesten aldri		4

Krever arbeidet ditt så mye konsentrasjon og oppmerksomhet at du ofte føler deg utslitt etter en arbeidsdag?

Ja, nesten alltid	46	1
Ganske ofte		2
Ganske sjelden		3
Aldri, eller nesten aldri		4

Hvordan trives du alt i alt med arbeidet ditt?

Veldig godt	47	1
Ganske godt		2
Godt		3
Ikke særlig godt		4
Dårlig		5

Hvis du er gårdbruker eller annen selvstendig næringsdrivende, har du noen ansatte som arbeider fast for deg?

Ingen fast ansatte	48	1
1–2 fast ansatte		2
3–10 fast ansatte		3
Mer enn 10 fast ansatte		4

HVORDAN HAR DU DET?

Når du tenker på hvordan du har det for tida, er du stort sett fornøyd med tilværelsen, eller er du stort sett misfornøyd?

Svært fornøyd	49	1
Meget fornøyd		2
Nokså fornøyd		3
Både - og		4
Nokså misfornøyd		5
Meget misfornøyd		6
Svært misfornøyd		7

Føler du deg stort sett sterk og opplagt, eller trett og sliten?

Meget sterk og opplagt	50	1
Sterk og opplagt		2
Ganske sterk og opplagt		3
Både - og		4
Ganske trett og sliten		5
Trett og sliten		6
Svært trett og sliten		7

MEDISIN/PLAGER

Har du vanligvis:

		JA	NEI
Hoste om morgenen?	51		
Oppspytt fra brystet om morgenen?	52		

Hvor ofte har du brukt smertestillende medisin den siste måneden?

Daglig	53	1
Hver uke, men ikke hver dag		2
Sjeldnere enn hver uke		3
Aldri		4

Hvor ofte har du brukt avslappende/beroligende medisin eller sovemedisin den siste måneden?

Daglig	54	1
Hver uke, men ikke hver dag		2
Sjeldnere enn hver uke		3
Aldri		4

Har du i løpet av siste måned vært plaget av nervøsitet (irritabel, urolig, anspent eller rastløs)**?**

Nesten hele tida	55	1
Ofte		2
Av og til		3
Aldri		4

Har du i løpet av siste måned hatt innsoving- eller søvnproblemer?

Nesten hver natt	56	1
Ofte		2
Av og til		3
Aldri		4

Har du i det store og hele en rolig og god følelse inne i deg?

Nesten hele tida	57	1
Ofte		2
Av og til		3
Aldri		4

VENNER/HJELP

Dersom du ble syk og måtte holde senga i lengre tid, hvor sannsynlig tror du det er at du kunne få nødvendig hjelp og støtte av familie, venner eller naboer?

Svært sannsynlig	58	1
Nokså sannsynlig		2
Usikkert		3
Usannsynlig		4
Helt usannsynlig		5

Hender det ofte at du føler deg ensom?

Meget ofte	59	1
Ofte		2
Av og til		3
Meget sjelden		4
Aldri		5

HVORDAN ER DU?

Har du tendens til å ta dine oppgaver mer alvorlig enn folk flest?

Ja, nettopp slik er jeg	60	1
Ja, stort sett		2
Både - og		3
Nei, stort sett ikke		4
Nei, tvert imot		5

		JA	NEI	VET IKKE
Har du i løpet av det siste året ofte følt at du har presset deg, eller stadig drevet deg selv framover?	61			

Føler du deg alltid under tidspress, også når det gjelder daglige gjøremål?

Alltid, eller nesten alltid	62	1
Noen ganger		2
Aldri		3

Er du vanligvis glad eller nedstemt?

Svært nedstemt	63	1
Nedstemt		2
Nokså nedstemt		3
Både - og		4
Nokså glad		5
Glad		6
Svært glad		7

HVA ER VIKTIG?

Synes du det er viktig at man prøver å være fornøyd med det man har?

Dette er særlig viktig	64	1
Dette er viktig		2
Både - og		3
Dette er mindre viktig		4
Dette er overhodet ikke viktig		5

Synes du det er viktig at man kan slå av på kravene?

Dette er særlig viktig	65	1
Dette er viktig		2
Både - og		3
Dette er mindre viktig		4
Dette er overhodet ikke viktig		5

Synes du det er viktig at man alltid er i godt humør?

Dette er særlig viktig	66	1
Dette er viktig		2
Både - og		3
Dette er mindre viktig		4
Dette er overhodet ikke viktig		5

Tusen takk for den hjelp du har gitt oss ved å fylle ut dette skjema.

TILLEGGS-SKJEMA OM BLODTRYKK

På skjemaet du leverte ved helseundersøkelsen, svarte du at du har, eller har brukt, medisin for høyt blodtrykk.

I Nord-Trøndelag har det siden 1980 pågått en undersøkelse om blodtrykksbehandling. Formålet ved undersøkelsen er å gjøre behandlingen bedre. En viktig del av undersøkelsen er å få opplysninger om hvordan du og alle andre med høyt blodtrykk har det, og hvilke erfaringer dere har gjort.

Det er derfor meget viktig at du fyller ut dette skjemaet så nøye som mulig.

Enkelte spørsmål kan være vanskelig å svare på. Prøv likevel å svare etter beste skjønn, og legg vekt på det som er vanlig eller gjennomsnittlig for deg.

Alle opplysninger blir behandlet av oss med streng taushetsplikt.

På forhånd takk!

Når ble det påvist at du hadde høyt blodtrykk første gang? (Skriv årstallet i ruta)

19 ____ 67

Vet ikke ...

Hvor ble det påvist?
(Sett kryss i bare *en* av rutene)

Hos almenpraktiserende lege (distriktslege, privatpraktiserende lege, turnuskandidat)	69	1
Hos militærlege		2
På sykehus		3
Vet ikke		4

Bruker du medisin for blodtrykk nå? ... 70 (JA / NEI)
Hvis «NEI»: Gå til de to siste spm. nederst til venstre.

Hvis «JA»: Når begynte du med medisiner for blodtrykket? (Skriv årstallet i ruta)

19 ____ 71

Vet ikke ...

Bruker du doserings-eske for tabletter? ... 220 (JA / NEI)

Har du medisinkort som viser hva slags medisin du skal ta? ... 221

Hender det at du glemmer å ta medisinene?
(Sett kryss i bare *en* av rutene)

Aldri	73	1
Sjelden (ca. en gang i mnd.)		2
Oftere		3

Hvor viktig mener du at det er for deg at du tar blodtrykksmedisinen(e) akkurat som foreskrevet?
(Sett kryss i bare *en* av rutene)

Ikke så viktig	74	1
Viktig		2
Meget viktig		3

Vet du hva blodtrykket ditt var ved siste kontroll?
(Sett kryss i bare *en* rute)

Nei	75	1
Ja		2
Usikker		3

Hvis «JA» eller «USIKKER», skriv hvor mye du tror det var: 76

Ikke skriv her

Skriv her ____ 79

Hvis du har brukt medisin for blodtrykket før, men ikke nå: Når slutta du med medisiner?
(Skriv årstallet i ruta)

19 ____

Vet ikke ... 82

Hvorfor slutta du med medisinene?
(Sett ett eller flere kryss)

Legen bestemte det	84
Jeg fikk plager av medisinene	85
Jeg mente det ikke var nødvendig med medisiner	86
Jeg var redd medisinene var skadelige	87
Annen årsak (skriv hvilken nedenfor)	88

Ikke skriv her

Skriv hvilken årsak det evt. var ____ 89

Har legen gitt deg andre råd i forbindelse med at du har for høyt blodtrykk?
(Sett kryss i bare *en* av rutene)

Nei	91	1
Ja		2
Husker ikke		3

Hvis «JA»; Hvilke råd?

____ 92

Ikke skriv her

____ 94

Hvordan opplever du behandlingen for blodtrykket? Gir det deg:
(Sett ett eller flere kryss)

Lettelse, ro, trygghet	96
Anspenthet, engstelse, redsel, uro	97
Dårlig humør, depresjon	98
Ingen spesielle følelser	99

Synes du at det er noen ulemper ved det at du må ha behandling for høyt blodtrykk?

Nei, ingen ulemper	100
Ja	

Hvis «JA»: Hva synes du er mest plagsomt?
(Sett ett eller flere kryss)

At du må bruke medisiner hver dag	101
At du må gå til legekontroll	102
At du må følge de råd som legen har gitt	103
At du har ubehag av medisinene	104
At du er engstelig for at det er noe alvorlig som feiler deg	105
At du synes det er leit å bli betraktet som «pasient»	106
Annet	107

TILLEGGS-SKJEMA FOR SUKKERSYKE

Du har opplyst at du har sukkersyke. Et viktig mål for helseundersøkelsen er å finne ut hvordan sukkersyke best kan behandles for å gi minst mulig plager.

Alle som har eller har hatt sukkersyke, bes derfor om å svare så godt som mulig på disse spørsmålene om sukkersyke.

Noen har svart på et lignende skjema høsten 1982. Det er likevel av stor betydning at disse fyller ut dette skjemaet.

Alle opplysninger blir behandlet av oss med streng taushetsplikt.

På forhånd takk!

Når ble sukkersyken din oppdaget? ... 19 108
(Skriv årstallet i ruta)

Hvordan ble sukkersyken din oppdaget?

Jeg søkte lege på grunn av symptomer ..... 110 [1]
Ble oppdaget uten at jeg hadde symptomer (ved legeattest, bedriftskontroll, undersøkelse for annen sykdom i eller utenfor sykehus) ..... [2]

Hva slags plager hadde du i tilfelle da sukkersyken ble oppdaget? (kryss evt. i flere ruter).

Ingen plager 111
Unormal tørste 112
Stor vannlating 113
Slapphet 114
Vekttap 115
Underlivskløe 116
Andre plager 117

Hvis «ANDRE PLAGER», skriv hvilke:

_____ 118
Ikke skriv her
_____ 120

Har noen av dine foreldre, søsken eller barn hatt sukkersyke? ..... 122 JA NEI

Hvis «JA», bruker eller brukte noen av disse insulinsprøyter? ..... 123 JA NEI

BEHANDLING

Bruker du insulinsprøyter mot sukkersyken? ..... 124 JA NEI

Hvis «JA», bruker du sprøyter daglig?

Sprøyte en gang daglig ..... 125 [1]
Sprøyte to eller flere ganger daglig ..... [2]

Om du bruker sprøyter, hvor mye insulin tar du tilsammen hver dag?
(Skriv antall ml i ruta – 1 «strek» svarer til 0,1 ml) ..... 126 , ml

Om du bruker sprøyter, hva heter den insulinen du bruker?
(Skriv navnet som står på glasset, begge dersom du bruker to sorter).

_____ 128
Ikke skriv her
_____ 130 JA NEI

Bruker du tabletter mot sukkersyken? ..... 132 JA NEI

Om du bruker tabletter mot sukkersyken, skriv nedenfor hva de heter, antall mg. som står på glasset/pakningen og hvor mange slike tabletter du tar hver dag:
(Skriv om begge sorter dersom du bruker mer enn en type tabletter mot sukkersyke)

_____ 133 , 138 139
Skriv navn på tabletten her — mg. pr. tabl. — antall pr. dag

_____ 140 , 145 146
Skriv navn på tabletten her — mg. pr. tabl. — antall pr. dag
Ikke skriv her

Hvor mange måltider spiser du hver dag? 147
Antall

Føler du at du vet nok om hva slags mat du kan spise? ..... 148 JA NEI

Hvis du skal svare på hva du virkelig spiser, og ikke hva legen din har sagt du bør spise, vil du da si at du: (Kryss av bare i den ruta som kommer nærmest det du virkelig gjør)

Spiser stort sett det samme som de som ikke har sukkersyke ..... 149 [1]
Spiser hva jeg vil unntatt sukker og søtsaker ..... [2]
Bruker på øyemål bestemt mengde brød, potet, melk og frukt ..... [3]
Veier/måler bestemt mengde brød, potet, melk og evt. frukt en eller flere dager i uka ..... [4]

Kontrollerer du hjemme hvor mye sukker du har i urinen? (Kryss av også om noen hjelper deg eller gjør det for deg) ..... 150 JA NEI

Hva heter den metoden du i tilfelle bruker til å måle sukker i urinen?

_____ 151
Skriv navnet som står på pakningen her
Ikke skriv her

Kontrollerer du noen gang hjemme hvor mye sukker du har i blod (blodsukker)? 152 JA NEI
(Kryss av også om noen hjelper deg eller gjør det for deg)

Hva heter den metoden du i tilfelle bruker til å måle blodsukker?

_____ 153
Skriv navnet på pakningen og navn på evt. apparat du måler med.
Ikke skriv her

Hvis du selv kontrollerer sukker i urin eller blod, hvor ofte gjør du det?
(Kryss av også om noen hjelper deg eller gjør det for deg)

Hver dag ..... 154 [1]
2-3 dager i uka ..... [2]
En dag i uka ..... [3]
En dag hver 14. dag ..... [4]
En dag i måneden ..... [5]
Sjeldnere enn en dag i måneden ..... [6]

VEND!

Hvis du selv kontrollerer sukker i urin eller blod: måler du flere ganger om dagen de dagene du gjør det? 155

JA | NEI

Dersom du tar urin- eller blodprøve selv, tar du resultatene med til legen ved kontroll?
(kryss av i den ruta som passer best)

Aldri ..... 156 — 1
Av og til ..... — 2
Oftest ..... — 3
Alltid ..... — 4

Går du til regelmessig kontroll hos lege for sukkersyken din? 157

JA | NEI

Hvis «JA», hvor lenge var det mellom de to siste gangene du var hos legen din til kontroll for sukkersyken?

Antall måneder (skriv i ruta) .... 158 — mndr.

Hva slags lege går du til kontroll hos for sukkersyken?
(Sett kryss i bare *en* rute)

Vanlig lege (distriktslege, almenpraktiserende lege, bedriftslege osv.) ..... 160 — 1
Sykehuslege (poliklinikk på sykehus) ..... — 2
Er innlagt i sykehjem eller annen institusjon og får kontroll der ..... — 3
Andre ..... — 4

Hvis «andre», skriv hva slags lege på linja over 161

Ikke skriv her

ANNEN SYKDOM

Bruker du regelmessig medisin for annet enn sukkersyken? 162

JA | NEI

Dersom «JA», skriv hva disse medisinene heter
(Skriv det navnet som står på glasset eller pakningen. Ta med alle sortene du bruker regelmessig. Skriv x bak navnet om du brukte dette også *før* du fikk sukkersyke).

163
166
169
172
175
178
181

Ikke skriv her

Tror du man er mer utsatt for å få enkelte andre sykdommer dersom man har dårlig kontrollert sukkersyke? 184

JA | NEI

Hvis «JA», nevn navnet på 3 slike sykdommer:
(Du behøver ikke å ha hatt disse sykdommene selv).

185
187
189

Ikke skriv her

Har du selv hatt noen vedvarende (kroniske) plager etter at du fikk sukkersyke?
(Skriv hva slags sykdom/plager på linjene under).

191
193
195
197
199
201

Ikke skriv her

UNDERVISNING - STØTTE

Er du medlem av Norges Landsforbund for Sukkersyke? 203

Har du noen gang deltatt på kurs eller møte om sukkersyke? 204

Får du grunnstønad gjennom trygdekontoret for sukkersyken? 205

Har du søkt om og fått særfradrag i skattelikninga fordi du har sukkersyke? 206

JA | NEI

HVORDAN HAR DU DET?

Synes du det er vanskelig å ha sukkersyke?
(kryss av i den ruta som passer best).

Ja, jeg føler det er som en plage hver dag ..... 207 — 1
Ja, jeg tenker ofte på det ..... — 2
Ja, av og til ..... — 3
Nei, sjelden ..... — 4
Nei, jeg tenker nesten aldri på det ..... — 5
Føler meg akkurat som alle som ikke har sukkersyke .. — 6

Dersom du synes det er vanskelig å ha sukkersyke, hva synes du er verst?
(Skriv det du mener på linja nedenfor).

Skriv her

Ikke skriv her

Forteller du til andre at du har sukkersyke?
(kryss av i den ruta som passer best).

Ja, alltid når jeg mener de bør vite det ..... 210 — 1
Ja, men bare om de spør ..... — 2
Nei, helst ikke ..... — 3
Jeg er redd for at andre skal få greie på det ..... — 4

JA | NEI

Har du noen gang hatt for lavt blodsukker?
(«føling», «insulinsjokk») 211

Hvis «JA», hvor mange ganger har du hatt det den siste uka? (Skriv antall ganger i ruta)..... 212

Hvor mange ganger har du vært innlagt i sykehus de siste 5 årene? (Skriv antall ganger i ruta)..... 213

Dersom du har ligget i sykehus de siste 5 årene, hva har du ligget der for?
(Skriv på linjene nedenfor)

214
216
218

Ikke skriv her

APPENDIX 3

QUESTIONNAIRE 1, HUNT 2

HELSEUNDERSØKELSEN
I NORD-TRØNDELAG

«JA, nå er det min tur!»

Personlig innbydelse

Spørreskjemaet er en viktig del av Helseundersøkelsen. Her finner du spørsmål om tidligere sykdom og om andre forhold som har betydning for helsa. Vennligst fyll ut skjemaet på forhånd og ta det med til Helseundersøkelsen. Dersom enkelte spørsmål er uklare, lar du dem bare stå ubesvarte til du møter fram, og drøfter dem med personalet som gjennomfører undersøkelsen. Alle svar vil bli behandlet strengt fortrolig.

Flere steder i skjemaet ber vi deg oppgi din alder da eventuell sykdom inntrådte. Hvis du ikke husker nøyaktig hvor gammel du var, skriver du et tall som er nærmest det du antar er korrekt.

Når resultatene fra undersøkelsen foreligger, vil det være enkelte som trenger ny undersøkelse hos egen lege. Dette vil du få beskjed om i det brevet som vi sender deg om dine resultater. Samtidig sender vi melding om resultatene dine til legen din. Det er derfor om å gjøre at du i rubrikken helt til slutt i skjemaet oppgir navnet på den allmennpraktiserende lege, kommunelege eller det helsesenter som du ønsker skal ta hånd om eventuell etterundersøkelse, og som vi skal sende resultatene til.

Med vennlig hilsen

Helsetjenesten i Nord-Trøndelag • Statens helseundersøkelser • Statens Institutt for Folkehelse

DET HANDLER OM HELSA DI

Hvordan er helse di nå?

Bare ett kryss

Dårlig	12	☐ 1
Ikke helt god		☐ 2
God		☐ 3
Svært god		☐ 4

LUFTVEGSPLAGER

	JA	NEI
Hoster du daglig i perioder av året?		
Hvis JA:		
Er hosten vanligvis ledsaget av oppspytt? 14		
Har du hatt hoste med oppspytt i minst 3 mnd. sammenhengende i hvert av de to siste åra?		
Har du hatt noe anfall med pipende eller tung pust de siste 12 måneder? 16		

	JA	NEI	Alder første gang
Har du eller har du hatt astma? 17			år

	JA	NEI
Har du brukt eller bruker du astmamedisiner? 20		

HJERTE-KARSYKDOMMER, DIABETES

Har du, eller har du hatt:	JA	NEI	Alder første gang
Hjerteinfarkt 21			år
Angina pectoris (hjertekrampe) 24			år
Hjerneslag/hjerneblødning 27			år
Diabetes (sukkersyke) 30			år

Hva ble resultatet siste gang du målte blodtrykket ditt?

Bare ett kryss

Begynne med/fortsette med blodtrykksmedisin	33	☐ 1
Komme til kontroll, men ikke ta blodtrykksmedisin		☐ 2
Ingen kontroll og ingen medisin nødvendig		☐ 3
Har aldri fått målt blodtrykket		☐ 4

Bruker du medisin mot høyt blodtrykk?

Bare ett kryss

Nå	34	☐ 1
Før, men ikke nå		☐ 2
Aldri brukt		☐ 3

	JA	NEI	VET IKKE
Har en eller flere av foreldre eller søsken hatt hjerteinfarkt (sår på hjertet) eller angina pectoris (hjertekrampe)?			

STOFFSKIFTE

Har du noen gang fått påvist:	JA	NEI	Alder første gang
for høyt stoffskifte 36			år
for lavt stoffskifte 39			år
struma 42			år
annen sykdom i skjoldbruskkjertelen			år
Bruker du eller har du brukt noen av disse medisinene:			
Thyroxin 48			år
Neo-Mercazole 51			år
Er du operert i skjoldbruskkjertelen			år
Har du fått radiojodbehandling 57			år

MUSKEL/SKJELETT-PLAGER

	JA	NEI
Har du i løpet av det siste året vært plaget med smerter og/eller stivhet i muskler og ledd som har vart i minst 3 måneder sammenhengende? 60		

Hvis NEI, gå videre til neste side øverst.
Hvis JA, svar på følgende:

Hvor har du hatt disse plagene?	JA	NEI
Nakke 61		
Skuldre (aksler)		
Albuer		
Håndledd, hender		
Bryst/mage 65		
Øvre del av ryggen		
Korsryggen		
Hofter		
Knær		
Ankler, føtter 70		

Hvis du har hatt plager i flere områder i minst 3 mnd. det siste året, setter du ring rundt det ja-krysset hvor plagene har vart lengst

Hvor lenge har plagene vart sammenhengende?

Svar for det området hvor plagene har vart lengst

Hvis under 1 år, oppgi antall mnd. 71	Antall mnd.
Hvis 1 år eller mer, oppgi antall år. 73	Antall år

Har plagene redusert din arbeidsevne det siste året?

Gjelder også hjemmearbeidende. Bare ett kryss

Nei/ubetydelig	I noen grad	I betydelig grad	Vet ikke
☐	☐	☐	☐

	JA	NEI	IKKE I ARBEID
Har du vært sykmeldt pga. disse plagene det siste året? 76			

	JA	NEI
Har plagene ført til redusert aktivitet i fritida?		

Har lege noen gang sagt at du har/har hatt noen av disse sykdommene:

		JA	NEI
Beinskjørhet (osteoporose)	78		
Fibromyalgi (fibrositt/kronisk smertesyndrom)			
Leddgikt (reumatoid artritt)			
Slitasjegikt (artrose)			
Bechterews sykdom	82		
Andre langvarige skjelett- eller muskelsykdommer			

Har du noen gang hatt:

		JA	NEI	Alder *siste* gang
Lårhalsbrudd	84			år
Brudd i håndledd/underarm	87			år
Nakkesleng (whiplash)	90			år
Skade som førte til sykehusinnleggelse				år

ANDRE PLAGER

I hvilken grad har du hatt disse plagene i de siste 12 månedene?

		Ikke plaget	Litt plaget	Mye plaget
Kvalme	96	☐	☐	☐
Brystbrann/sure oppstøt		☐	☐	☐
Diaré		☐	☐	☐
Treg mage		☐	☐	☐
Hjertebank		☐	☐	☐
Åndenød	101	☐	☐	☐

ANDRE SYKDOMMER

Har du eller har du noen gang hatt:

		JA	NEI	Alder første gang
Epilepsi	102			år
Psykiske plager hvor du har søkt hjelp				år
Kreftsykdom	108			år
Annen langvarig sykdom	111			

DAGLIGE FUNKSJONER

Har du noen langvarig sykdom, skade eller lidelse av fysisk eller psykisk art som nedsetter dine funksjoner i ditt daglige liv? ... 112

JA	NEI

Langvarig: minst ett år

Hvis JA:

Hvor mye vil du si at dine funksjoner er nedsatt?

		Litt nedsatt	Middels nedsatt	Mye nedsatt
Er bevegelseshemmet	113	☐	☐	☐
Har nedsatt syn		☐	☐	☐
Har nedsatt hørsel		☐	☐	☐
Hemmet pga. kroppslig sykdom.		☐	☐	☐
Hemmet pga. psykiske plager...	117	☐	☐	☐

MENN fortsetter øverst neste spalte

BESVARES BARE AV KVINNER

Hvor mange barn har du født? 118
Sett 0 hvis du ikke har født barn

Antall barn

Hvis du har født barn, besvar:

Hvor gammel var du da du fødte ditt første barn? 120

Hvor gammel var du da du fødte ditt siste barn? 122
Besvares ikke hvis du har født bare ett barn

Alder

år

Hvor gammel var du da du fikk menstruasjon? 124
Sett 0 hvis du ikke noen gang har hatt menstruasjon

år

Fortsett neste spalte øverst

RØYKING

Røykte noen av de voksne hjemme da du vokste opp? 126

JA	NEI

Bor du, eller har du bodd, sammen med noen dagligrøykere etter at du fylte 20 år? 127

JA	NEI

Hvor lenge er du vanligvis daglig til stede i røykfylt rom? 128
Sett 0 hvis du ikke oppholder deg i røykfylt rom

Antall timer

Røyker du selv?

		JA	NEI
Sigaretter daglig?	130		
Sigarer/sigarillos daglig?			
Pipe daglig?	132		

Aldri røykt daglig ..... *(Sett kryss)* ☐

Hvis du har røykt daglig tidligere, hvor lenge er det siden du sluttet? 134

Antall år

Hvis du røyker daglig nå eller har røykt tidligere:

Hvor mange sigaretter røyker eller røykte du vanligvis daglig? 136

Antall sigaretter

Hvor gammel var du da du begynte å røyke daglig? 140

Alder

år

Hvor mange år tilsammen har du røykt daglig? 142

Antall år

KAFFE/TE/ALKOHOL

Hvor mange kopper kaffe/te drikker du daglig?
Sett 0 hvis du ikke drikker kaffe/te daglig

		Antall kopper
Kokekaffe	144	
Annen kaffe	146	
Te	148	

Alkohol:
Er du total avholdsmann/-kvinne? 150

JA	NEI

Hvor mange ganger i måneden drikker du vanligvis alkohol? 151
Regn ikke med lettøl. Sett 0 hvis mindre enn 1 gang i mnd.

Antall ganger

Hvor mange glass øl, vin eller brennevin drikker du vanligvis i løpet av to uker?

Regn ikke med lettøl.
Sett 0 hvis du ikke drikker alkohol 153

Øl	Vin	Brennevin
glass	glass	glass

FYSISK AKTIVITET

I FRITIDA

Hvordan har din fysiske aktivitet i fritida vært det siste året? *Tenk deg et ukentlig gjennomsnitt for året.*

Arbeidsveg regnes som fritid

		Timer pr. uke: Ingen	Under 1	1-2	3 og mer
Lett aktivitet *(ikke svett/andpusten)*	159	☐	☐	☐	☐
Hard fysisk aktivitet *(svett/andpusten)*	160	☐ 1	☐ 2	☐ 3	☐ 4

UNDER ARBEID

Hvis du er i lønnet eller ulønnet arbeid:

Hvorledes vil du beskrive arbeidet ditt?
Bare ett kryss

For det meste stillesittende arbeid *(f.eks. skrivebordsarbeid, montering)* ..... 161 ☐ 1

Arbeid som krever at du går mye *(f.eks. ekspeditørarb., lett industriarb., undervisning)* ..... ☐ 2

Arbeid hvor du går og løfter mye *(f.eks. postbud, pleier, bygningsarbeid)* ..... ☐ 3

Tungt kroppsarbeid *(f.eks. skogsarbeid, tungt jordbruksarb.,tungt bygningsarb.)* ☐ 4

Bla om!

HVORLEDES FØLER DU DEG?

Har du de siste to ukene følt deg:

	Nei	Litt	En god del	Svært mye
Trygg og rolig? 162	☐	☐	☐	☐
Glad og optimistisk?	☐	☐	☐	☐
Har du følt deg:				
Nervøs og urolig?	☐	☐	☐	☐
Plaget av angst? 165	☐	☐	☐	☐
Irritabel?	☐	☐	☐	☐
Nedfor/deprimert?	☐	☐	☐	☐
Ensom? 168	☐ 1	☐ 2	☐ 3	☐ 4

Her kommer noen flere spørsmål om hvorledes du føler deg. For hvert spørsmål setter du kryss for ett av de fire svarene som best beskriver dine følelser ***den siste uka.*** *Ikke tenk for lenge på svaret - de spontane svarene er best*

Jeg gleder meg fortsatt over ting slik jeg pleide før 169
Avgjort like mye ..... ☐ 1 Bare lite grann ..... ☐ 3
Ikke fullt så mye ..... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg har en urofølelse som om noe forferdelig vil skje 170
Ja, og noe svært ille .... ☐ 1 Litt, bekymrer meg lite . ☐ 3
Ja, ikke så veldig ille ... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg kan le og se det morsomme i situasjoner 171
Like mye nå som før .... ☐ 1 Avgjort ikke som før .... ☐ 3
Ikke like mye nå som før ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg har hodet fullt av bekymringer 172
Veldig ofte ..... ☐ 1 Av og til ..... ☐ 3
Ganske ofte ..... ☐ 2 En gang i blant ..... ☐ 4

Jeg er i godt humør 173
Aldri ..... ☐ 1 Ganske ofte ..... ☐ 3
Noen ganger ..... ☐ 2 For det meste ..... ☐ 4

Jeg kan sitte i fred og ro og kjenne meg avslappet 174
Ja, helt klart ..... ☐ 1 Ikke så ofte ..... ☐ 3
Vanligvis ..... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg føler meg som om alt går langsommere 175
Nesten hele tiden ..... ☐ 1 Fra tid til annen ..... ☐ 3
Svært ofte ..... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg føler meg urolig som om jeg har sommerfugler i magen 176
Ikke i det hele tatt ..... ☐ 1 Ganske ofte ..... ☐ 3
Fra tid til annen ..... ☐ 2 Svært ofte ..... ☐ 4

Jeg bryr meg ikke lenger om hvordan jeg ser ut 177
Ja, har sluttet å bry meg ☐ 1 Kan hende ikke nok .... ☐ 3
Ikke som jeg burde ..... ☐ 2 Bryr meg som før ..... ☐ 4

Jeg er rastløs som om jeg stadig må være aktiv 178
Uten tvil svært mye ..... ☐ 1 Ikke så veldig mye ..... ☐ 3
Ganske mye..... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg ser med glede frem til hendelser og ting 179
Like mye som før ..... ☐ 1 Avgjort mindre enn før . ☐ 3
Heller mindre enn før ... ☐ 2 Nesten ikke i det hele tatt ☐ 4

Jeg kan plutselig få en følelse av panikk 180
Uten tvil svært ofte ..... ☐ 1 Ikke så veldig ofte ..... ☐ 3
Ganske ofte ..... ☐ 2 Ikke i det hele tatt ..... ☐ 4

Jeg kan glede meg over gode bøker, radio og TV 181
Ofte ..... ☐ 1 Ikke så ofte ..... ☐ 3
Fra tid til annen ..... ☐ 2 Svært sjelden ..... ☐ 4

UTDANNING

Hvilken utdanning er den høyeste du har fullført?

Grunnskole 7-10 år, framhaldsskole, folkehøgskole ..... 182 ☐ 1
Realskole, middelskole, yrkesskole, 1-2 årig videregående skole..... ☐ 2
Artium, øk.gymnas, allmennfaglig retning i videregående skole ..... ☐ 3
Høgskole/universitet, mindre enn 4 år ..... ☐ 4
Høgskole/universitet, 4 år eller mer ..... ☐ 5

ARBEID

Hva slags arbeidssituasjon har du nå?
Ett eller flere kryss

Lønnet arbeid ..... 183 ☐
Selvstendig næringsdrivende..... ☐
Heltids husarbeid ..... ☐
Utdanning, militærtjeneste ..... ☐
Arbeidsledig, permittert..... ☐
Pensjonist/trygdet..... 188 ☐

Hvor mange timer lønnet arbeid har du i uka? ..... 189 Antall timer

Har du skiftarbeid, nattarbeid eller går vakt?

JA	NEI

ALT I ALT

Når du tenker på hvordan du har det for tida, er du stort sett fornøyd med tilværelsen eller er du stort sett misfornøyd?
Bare ett kryss

Svært fornøyd ..... 192 ☐ 1
Meget fornøyd ..... ☐ 2
Ganske fornøyd..... ☐ 3
Både/og..... ☐ 4
Nokså misfornøyd ..... ☐ 5
Meget misfornøyd..... ☐ 6
Svært misfornøyd..... ☐ 7

DIN LEGE

Hvis denne helseundersøkelsen viser at du bør undersøkes nærmere, hvilken allmennpraktiserende lege/kommunelege ønsker du skal foreta undersøkelsen?

Skriv navnet på legen her: 193

Ikke skriv her

Takk for utfyllingen!

Nok en gang:

Velkommen til undersøkelsen!

IE 332 5201 - 50.000 - 09.96

APPENDIX 4

QUESTIONNAIRE 2, HUNT 2

hunt

Helseundersøkelsen i Nord-Trøndelag

SKJEMA FOR KVINNER 20–69 ÅR

Takk for frammøtet til undersøkelsen!

Vi vil også be deg fylle ut dette spørreskjemaet. Opplysningene vil bli brukt i større forskningsarbeider om forebyggende helsearbeid. Noen av spørsmålene likner på spørsmål du har svart på i det skjemaet du fylte ut heime og leverte ved frammøte til helseundersøkelsen. Det er likevel viktig at du svarer på alle spørsmålene også i dette skjemaet. Det utfylte skjemaet returneres i vedlagte svarkonvolutt. Porto er betalt.

Alle opplysningene er underlagt streng taushetsplikt.

Vennlig hilsen

Helsetjenesten i Nord-Trøndelag

Statens Institutt for Folkehelse Statens helseundersøkelser

Hvis du ikke ønsker å besvare spørreskjemaet, sett kryss her og returner skjemaet. Da slipper du purring.

Jeg ønsker ikke å besvare skjemaet ○

UTFYLLING

Dato for utfylling av skjema: / 19 19

OPPVEKST

I hvilken kommune bodde du da du fylte 1 år?

Hvis du ikke bodde i Norge, oppgi ***land*** *i stedet for kommune.*

24

ARBEID

Nåværende eller tidligere arbeid:

Hva slags inntektsgivende arbeid har du og event. din ektefelle/samboer? *Hvis du/dere ikke har inntektsgivende arbeid nå: Oppgi det siste yrket.*

		Deg selv		Ektefelle/ samboer
Spesialarbeider eller ufaglært arbeider	25	☐		☐ 36
Fagarbeider, handverker, formann		☐		☐
Underordnet funksjonær (f.eks. butikk, kontor, off. tjenester)		☐		☐
Fagfunksjonær (f.eks. sykepleier, tekniker, lærer)		☐		☐
Overordnet stilling i off. eller privat virksomhet		☐		☐
Sjåfør	30	☐		☐ 41
Gårdbruker eller skogeier		☐		☐
Fisker		☐		☐
Selvstendig i akademisk erverv (f.eks. tannlege, advokat)		☐		☐
Annen selvstendig næringsvirksomhet		☐		☐
Har ikke vært i inntektsgivende arbeid	35	☐		☐ 46

Hvis du NÅ ikke har inntektsgivende arbeid eller du ikke har heltids husarbeid: Gå til BOLIG.

Har du i løpet av de siste 12 månedene hatt sykefravær:		Ja	Nei
med egenmelding	47	☐	☐
med sykmelding fra lege	48	☐	☐

Hvis «Ja»: **Hvor lenge *tilsammen*?** *Bare ett kryss*

2 uker eller mindre	49	☐ 1
2-8 uker		☐ 2
Mer enn 8 uker		☐ 3

Har du i løpet av de siste 12 månedene vurdert å skifte yrke eller arbeidsplass?		Ja	Nei
	50	☐	☐

Er arbeidet ditt så fysisk anstrengende at du ofte er sliten i kroppen etter en arbeidsdag? *Bare ett kryss* 51

Ja, nesten alltid	☐ 1	Ganske sjelden	☐ 3
Ganske ofte	☐ 2	Aldri, eller nesten aldri	☐ 4

Krever arbeidet ditt så mye konsentrasjon og oppmerksomhet at du ofte føler deg utslitt etter en arbeidsdag? 52

Ja, nesten alltid	☐ 1	Ganske sjelden	☐ 3
Ganske ofte	☐ 2	Aldri, eller nesten aldri	☐ 4

Hvordan trives du alt i alt med arbeidet ditt? 53

Veldig godt	☐ 1	Ikke særlig godt	☐ 3
Godt	☐ 2	Dårlig	☐ 4

BOLIG

Hvem bor du sammen med?

Ett kryss for hver linje og angi antall

		Ja	Nei	Antall
Ektefelle/samboer	54	☐	☐	
Andre personer over 18 år	55	☐	☐	
Personer under 18 år	58	☐	☐	

Hvor mange av barna har plass i barnehage? 61 Antall

Hvilken type bolig bor du i? *Bare ett kryss*

Enebolig/villa	63	☐ 1
Gårdsbruk		☐ 2
Blokk/terrasseleilighet		☐ 3
Rekkehus/2-4 mannsbolig		☐ 4
Annen bolig		☐ 5

Hvor stor er din boenhet? 64 kvm

		Ja	Nei
Er det heldekkende tepper i stua?	67	☐	☐
Er det heldekkende tepper på ditt soverom?		☐	☐
Er det katt i boligen?	69	☐	☐
Er det hund i boligen?		☐	☐
Er det andre pelskledde dyr eller fugler i boligen?		☐	☐

ØKONOMI

Mottar du noen av følgende *offentlige* ytelser?		Ja	Nei
Sykepenger/sykelønn/rehabiliteringspenger	72	☐	☐
Ytelser under yrkesrettet attføring		☐	☐
Uførepensjon	74	☐	☐
Alderspensjon		☐	☐
Sosialstøtte		☐	☐
Arbeidsløshetstrygd		☐	☐
Overgangsstønad		☐	☐
Etterlattepensjon	79	☐	☐
Andre ytelser		☐	☐

Har det i løpet av det siste året hendt at husholdningen har hatt vansker med å klare de løpende utgifter til mat, transport, bolig og liknende? *Bare ett kryss* 81

Ja, ofte	☐ 1	Ja, en sjelden gang	☐ 3
Ja, av og til	☐ 2	Nei, aldri	☐ 4

VENNER

Hvor mange gode venner har du?

Regn med de du kan snakke fortrolig med og som kan gi deg god hjelp når du trenger det 82 Antall

Tell ikke med de du bor sammen med, men regn med andre slektninger

		Ja	Nei
Føler du at du har mange nok gode venner?	84	☐	☐

Hvor ofte tar du vanligvis del i foreningsvirksomhet som f.eks. syklubb, idrettslag, politiske lag, religiøse eller andre foreninger? 85

Aldri, eller noen få ganger i året	☐ 1	Omtrent en gang i uka	☐ 1
1-2 ganger i måneden	☐ 2	Mer enn en gang i uka	☐ 2

DER DU BOR

Svar ut fra nærmiljøet, dvs. nabolaget/grenda:
Ett kryss for hvert spørsmål

Jeg føler et sterkt fellesskap med de som bor her 86
Helt enig ☐ 1 Delvis enig ☐ 2 Usikker ☐ 3 Delvis uenig ☐ 4 Helt uenig ☐ 5

Selv om noen tar initiativ, er det ingen som blir med på det som settes i gang her 87
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Hvis jeg flytter herfra, vil jeg lengte tilbake 88
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Man kan ikke stole på hverandre her 89
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Når noe skal gjøres her, er det lett å få folk med 90
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Det er vanskelig å få kontakt med folk her 91
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Det er godt samhold her 92
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Ingen orker å ta initiativ til noe lenger her 93
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Folk trives godt her 94
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Folk her kan ha store problemer uten at naboen vet noe 95
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Det er alltid noen som tar initiativ til å løse nødvendige oppgaver her 96
Helt enig ☐ Delvis enig ☐ Usikker ☐ Delvis uenig ☐ Helt uenig ☐

Folk snakker lite med hverandre her 97
Helt enig ☐ 1 Delvis enig ☐ 2 Usikker ☐ 3 Delvis uenig ☐ 4 Helt uenig ☐ 5

SYKDOM I FAMILIEN

Kryss av for de slektningene som har eller har hatt noen av sykdommene. Kryss av for "ingen" hvis ingen av slektningene har hatt denne sykdommen: *Evt. flere kryss på hver linje*

	Mor	Far	Bror	Søster	Barn	Ingen
Hjerneslag eller hjerneblødning 98	☐	☐	☐	☐	☐	☐
Hjerteinfarkt før 60 års alder 104	☐	☐	☐	☐	☐	☐
Astma 110	☐	☐	☐	☐	☐	☐
Allergi 116	☐	☐	☐	☐	☐	☐
Kreftsykdom 122	☐	☐	☐	☐	☐	☐
Høyt blodtrykk 128	☐	☐	☐	☐	☐	☐
Psykiske plager 134	☐	☐	☐	☐	☐	☐
Osteoporose (benskjørhet) 140	☐	☐	☐	☐	☐	☐
Diabetes (sukkersyke) 146	☐	☐	☐	☐	☐	☐
Alder da de fikk diabetes 152	år	år	år	år	år	

Har du *selv* høysnue eller neseallergi? 162 Ja ☐ Nei ☐

BRUK AV HELSETJENESTER

Har du i løpet av de siste 12 månedene vært hos:
Ett kryss på hver linje

	Ja	Nei
allmennpraktiserende lege (kommunelege, privatpraktiserende lege, turnuskandidat) 163	☐	☐
bedriftslege	☐	☐
lege ved sykehus (uten at du var innlagt)	☐	☐
annen lege	☐	☐
fysioterapeut	☐	☐
kiropraktor	☐	☐
homøopat 169	☐	☐
annen behandler (naturmedisiner, fotsoneterapeut, håndspålegger, "healer", "synsk", e.l.)	☐	☐

Har du vært innlagt i sykehus de siste 5 åra? 171 Ja ☐ Nei ☐

ALKOHOL

Hvis du er totalavholdskvinne: Gå til KOSTHOLD.

Ett kryss for hver spørsmål

Har du noen gang følt at du burde redusere alkoholforbruket ditt? 172 Ja ☐ Nei ☐

Har andre noen gang kritisert alkoholbruken din? 173 Ja ☐ Nei ☐

Har du noen gang følt ubehag eller skyldfølelse pga. alkoholbruken din? 174 Ja ☐ Nei ☐

Har det å ta en drink noen gang vært det første du har gjort om morgenen for å roe nervene, kurere bakrus eller som en oppkvikker? 175 Ja ☐ Nei ☐

KOSTHOLD

Hvor mange måltider spiser du vanligvis daglig (middag og brødmåltid)? 176 — Antall

Hvor mange dager i uka spiser du varm middag?

Hva slags type brød (kjøpt eller hjemmebakt) spiser du vanligvis? *Inntil to kryss*

Brødtypen ligner mest på 178	Loff	Fint brød	Kneipp-brød	Grov-brød	Knekke-brød
	☐	☐	☐	☐	☐

Hva slags *fett* blir vanligvis brukt i din husholdning?

Ett kryss for matlaging og ett kryss for brød	*Til matlaging*	*På brød*
Bruker *ikke* smør eller margarin	183 ☐ 1	184 ☐ 1
Meierismør	☐ 2	☐ 2
Hard margarin	☐ 3	☐ 3
Bløt (soft) margarin	☐ 4	☐ 4
Smør/margarin blanding	☐ 5	☐ 5
Lettmargarin	☐ 6	☐ 6
Oljer	☐ 7	

MEDISINBRUK

Har du i deler av de siste 12 måneder brukt noen medisiner daglig eller nesten daglig? 185 Ja ☐ Nei ☐

Hvis «Ja»:
Angi hvor mange måneder du brukte følgende medisiner: *Sett 0 hvis du ikke har brukt medisinene*

	Antall mndr.		Antall mndr.
smertestillende 186		hjertemedisin (ikke blodtrykksmedisin)	
sovemedisin 188		annen medisin	
beroligende medisin		*Kosttilskudd:*	
medisin mot depresjon		jerntabletter 202	
allergimedisin 194		vitamintilskudd	
astmamedisin 196		tran/fiskeoljer 206	

Hvor ofte har du brukt avslappende/beroligende medisin eller sovemedisin den siste måneden? 208
Daglig ☐ 1 Sjeldnere enn hver uke ☐ 3
Hver uke, men ikke hver dag ☐ 2 Aldri ☐ 4

HODEPINE

Har du vært plaget av hodepine i løpet av de siste 12 måneder? 209
Ja, anfallsvis (migrene)..... ☐ 1
Ja, annen slags hodepine.... ☐ 2
Nei ..... ☐ 3

Antall anfall siste 12 mndr. 210 ☐☐☐

Hvis «Nei»: Gå til MUSKEL-/SKJELETTPLAGER

Omtrent hvor mange dager i pr. måned har du hodepine?
Mindre enn 7 dager ☐ 1 7 til 14 dager ☐ 2 Mer enn 14 d. ☐ 3

Hvor lenge varer hodepinen vanligvis hver gang? 213
Mindre enn 4 timer ☐ 1 4 timer–3 døgn ☐ 2 Mer enn 3 døgn ☐ 3

Hvor ofte er hodepinen preget av eller ledsaget av:

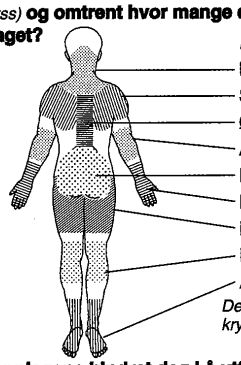
Ett kryss på hver linje	*Sjelden eller aldri*	*Av og til*	*Ofte*
bankende/dunkende smerte 214	☐	☐	☐
pressende smerte	☐	☐	☐
halvsidighet, alltid samme side	☐	☐	☐
halvsidighet, vekselvis h. og v. side	☐	☐	☐
smerter i «hele hodet»	☐	☐	☐
kvalme 219	☐	☐	☐
lys- og/eller lydskyhet	☐	☐	☐
forverring ved fysisk aktivitet.....	☐	☐	☐
synsforstyrrelser *før* hodepine 222	☐	☐	☐

Hvor mange tabletter/stikkpiller har du eventuelt brukt av disse medisinene *alt i alt i løpet av den siste måneden*?
Skriv 0 hvis du ikke har brukt medisinen.
Cafergot 223 ☐☐ Anervan 225 ☐☐ Imigran 227 ☐☐

MUSKEL-/SKJELETTPLAGER

Har du hatt plager (smerter, verk, ubehag) i muskler og/eller ledd i *den siste måneden*? 229 Ja ☐ Nei ☐

Hvis «Ja»: **Hvor har du hatt disse plagene** *(ett eller flere kryss)* **og omtrent hvor mange dager tilsammen var du plaget?**



Plager (Sett kryss)	Antall dager
Nakke 230	☐☐
Skuldre/aksler.....233	☐☐
Øvre del av ryggen	☐☐
Albuer 239	☐☐
Korsryggen 242	☐☐
Handledd/hender 245	☐☐
Hofter.....248	☐☐
Knær.....251	☐☐
Ankler/føtter 254	☐☐

*Dersom flere kryss: Sett **ring** rundt krysset **der plagen var verst***

Har plagene hindret deg i å utføre daglige aktiviteter den siste måneden?

	Ja	Nei
I arbeidet.....257	☐	☐
I fritida 258	☐	☐

SMERTER I BEINA

	Ja	Nei
Har du sår på tå, fot eller ankel som ikke vil gro? 259	☐	☐
Har du smerter i det ene eller i begge beina når du går? 260	☐	☐
Har du oppsøkt lege p.g.a. smerter i beina? 261	☐	☐

Hvis «NEI» på disse spørsmålene: Gå til MENSTRUASJON

	Ja	Nei
Kan du gå lenger enn 50 meter? 262	☐	☐
Forsvinner smerten når du står stille en stund? 263	☐	☐
Må du sette deg for at smerten skal gå over? 264	☐	☐

Hvor gjør det mest vondt? *Ett kryss* 265
Fot ☐ Legg ☐ Lår ☐ Hofte ☐

	Ja	Nei
Har du smerter i beina når du er i ro? 266	☐	☐
Er smertene verst når du ligger i senga? 267	☐	☐
Blir søvnen forstyrret av smertene? 268	☐	☐
Får du mindre vondt når beinet ligger høyt? 269	☐	☐
Får du mindre vondt når beinet ligger lavt, f.eks. om beinet henger utfor sengekanten? 270	☐	☐
Bedres smertene når du står opp og går litt? 271	☐	☐

MENSTRUASJON

Har du menstruasjon fremdeles?..... 272 Ja ☐ Nei ☐

Hvis «Nei»: **Hvor gammel var du da den sluttet?** 273 ☐☐ år

Er du gravid nå? ..... 275 Ja ☐ Nei ☐ Vet ikke ☐

Har du innsatt spiral nå? ..... 276 Ja ☐ Nei ☐

Når hadde du siste menstruasjon? ..... 277 Dag ☐☐ Måned ☐☐ År ☐☐☐☐
Husker du ikke dag, bare angi måned og år, husker du bare år, angi år.

Menstruasjonen din de siste 12 måneder:

Har du det siste året hatt regelmessige menstruasjoner?
At menstruasjonen har vart omtrent like lenge hver gang med omtrent like lange mellomrom ..... 283 Ja ☐ Nei ☐ Usikker ☐

Hvor mange dager hadde du blødning siste gang du hadde menstruasjon? ..... 284 Antall dager ☐☐

Hvor mange dager var du uten blødning mellom nest siste og siste menstruasjon? ... 286 Antall dager ☐☐

Har menstruasjonen din det siste året uteblitt i mer enn 3 måneder uten at du var gravid? 289 Ja ☐ Nei ☐

Hvis «Ja»: **Hvor mange måneder i trekk har du vært uten menstruasjonsblødninger?** ..... 290 Antall mndr. ☐☐

Hvis «Ja»: **Oppsøkte du lege?** ..... 292 Ja ☐ Nei ☐

Menstruasjonen tidligere (dvs. før de siste 12 månedene):

Har menstruasjonen din tidligere uteblitt uten at du var gravid? ..... 293 Ja ☐ Nei ☐

Hvis «Ja»: **Hvor lenge og hvor ofte var den borte sammenhengende?** *Sett kryss eventuelt flere steder*

	1 gang	*2 ganger*	*Oftere*
3–6 måneder..... 294	☐	☐	☐
6–12 måneder.....	☐	☐	☐
Over ett år..... 296	☐	☐	☐

OPERASJONER I UNDERLIVET

	Ja	Nei	Vet ikke
Har du noen gang blitt operert i underlivet? 297	☐	☐	☐

Hvis «Ja»: **Kryss av for hver operasjon:**

	Ja	Nei	Vet ikke
Fjernet deler av eller bare én eggstokk 298	☐	☐	☐
Fjernet begge eggstokkene (totalt) 299	☐	☐	☐

Hvis du har fjernet begge eggstokkene, hvor gammel var du da? 300 ____ år

	Ja	Nei	Vet ikke
Operert for endometriose 302	☐	☐	☐
Sterilisert	☐	☐	☐
Utskraping fra livmor (sykehus)	☐	☐	☐
Fjernet hele livmoren 305	☐	☐	☐

Hvis du har fjernet hele livmoren, hvor gammel var du da? 306 ____ år

P-PILLER

	Ja	Nei
Har du noen gang brukt p-piller, minipiller inkludert? 308	☐	☐

Hvis «Ja»: **Hvor gammel var du første gang du brukte p-piller?** 309 ____ år

Hvor lenge har du brukt p-piller i alt? 311 ____ år

Hvis under ett år, antall måneder 313 ____ mndr.

	Ja	Nei
Bruker du p-piller nå?	☐	☐

Hvilket merke bruker du? 316 ____

HORMONBEHANDLING

Utenom p-piller

Har du noen gang brukt medisiner som inneholder østrogen? Vanlige navn på slike medisiner er: Cyclabil, Estraderm, Kilogest, Ovesterin, Progynova, Trisekvens.

	Nå	Før	Aldri
Tabletter eller plaster 318	☐	☐	☐
Krem eller stikkpiller 319	☐	☐	☐

Hvis «Ja»: **Hvor gammel var du første gang du fikk østrogenmedisin, og omtrent hvor mange år brukte du slik medisin?**

	Din alder	Antall år
Tabletter eller plaster 320		
Krem eller stikkpiller 324		

Hvis du bruker østrogenmedisin nå, hvilket merke bruker du? 328 ____

PROBLEMER MED Å BLI GRAVID

	Ja	Nei
Har du noen gang prøvd i mer enn ett år å bli gravid? 329	☐	☐

Hvis «Ja»: **Hvor gammel var du første gang du hadde problemer med å bli gravid?** 330 ____ år

	Ja	Nei
Har du noen gang oppsøkt lege fordi du hadde problemer med å bli gravid? 332	☐	☐

GRAVIDITETER, FØDSLER OG AMMING

Hvor mange ganger har du vært gravid totalt?
*Regn med **alle** svangerskap, spontane eller selvbestemte aborter, så vel som fødsler (også dødfødsler)* 333 ____ ganger

Hvor mange barn har du født? 335 ____ barn

Fyll ut for hvert barn (de første 7) opplysninger om fødselsår og omtrent antall måneder du ammet hvert barn og antall måneder menstruasjonen din var borte etter fødselen (fylles ut også for dødfødte eller for barn som er døde senere i livet).

Barn	Fødselsår	Antall måneder med amming	Antall blødningsfrie måneder
1 336	19		
2 342	19		
3 348	19		
4 354	19		
5 360	19		
6 366	19		
7 372	19		

URINLEKKASJE

	Ja	Nei
Har du ufrivillig urinlekkasje? 378	☐	☐

Hvis «Nei»: Gå til KALK I KOSTEN ...

Hvor ofte har du urinlekkasje? 379
- sjeldnere enn en gang pr. måned ☐
- en eller flere ganger pr. måned ☐
- en eller flere ganger pr. uke ☐
- hver dag og/eller natt ☐

Hvor mye urin lekker du vanligvis hver gang? 380
dråper eller lite ☐ små skvetter ☐ større mengder ☐

	Ja	Nei
Har du lekkasje av urin i forbindelse med hosting, nysing, latter, tunge løft 381	☐	☐
Har du lekkasje av urin i forbindelse med plutselig og sterk vannlatingstrang? 382	☐	☐

Hvor lenge har du hatt urinlekkasje? 383
0-5 år ☐ 5-10 år ☐ Over 10 år ☐

	Ja	Nei
Har du søkt lege på grunn av urinlekkasje? 384	☐	☐

Hvordan opplever du lekkasjeplagene dine? 385 *Ett kryss*
- ikke noe problem ☐
- en liten plage ☐
- en del plaget ☐
- mye plaget ☐
- svært stort problem ☐

KALK I KOSTEN OG KOSTTILSKUDD

Hvor mange glass melk (alle sorter, også drikkeyoghurt) drikker du vanligvis daglig? *Bare ett kryss* 386
- Ingen ☐ 1
- Mindre enn ett ☐ 2
- 1–2 glass ☐ 3
- 3 eller mer ☐ 4

Hvor mange brødskiver med kvitost spiser du vanligvis daglig? *Bare ett kryss*
- Ingen ☐ 1
- Mindre enn en ☐ 2
- 1–2 skiver ☐ 3
- 3 eller mer ☐ 4

Bruker du vanligvis noen av disse kosttilskuddene?

	Ja	Nei
vitamin D-tilskudd 388	☐	☐
kalktabletter eller benmel	☐	☐

HUMØR OG TRIVSEL

Ett kryss på hver linje

Angi hvordan du har følt deg den siste måneden:	*Aldri*	*Noen ganger*	*Ganske ofte*	*For det meste*
i godt humør 390	☐	☐	☐	☐
i dårlig humør 391	☐	☐	☐	☐

Er du rask til å oppfatte et humoristisk poeng? 392	*Svært treg*	*Ganske treg*	*Ganske rask*	*Svært rask*
	☐	☐	☐	☐

Er du enig i at det er noe ansvarsløst over folk som stadig prøver å være morsomme? 393

Nei, slett ikke ..... ☐1 Ganske enig ..... ☐3
I noen grad ..... ☐2 Ja, absolutt ..... ☐4

Er du en munter person? 394

Nei, slett ikke ..... ☐1 Ganske munter ..... ☐3
I noen grad ..... ☐2 Ja, absolutt ..... ☐4

SINNE

Sett kryss på det svaret som best beskriver deg i forhold til de to påstandene nedenfor:

Jeg gir uttrykk for mitt sinne, og andre mennesker vet at jeg er sint 395

Nesten aldri ..... ☐1 Ganske ofte ..... ☐3
Noen ganger ..... ☐2 Nesten alltid ..... ☐4

Jeg koker av sinne, men jeg viser det ikke til andre 396

Nesten aldri ..... ☐1 Ganske ofte ..... ☐3
Noen ganger ..... ☐2 Nesten alltid ..... ☐4

HVILE OG AVSLAPPING

Hvor mange timer tilbringer du *vanligvis* i *liggende* stilling i løpet av et døgn?
(nattesøvn, middagshvil) .....397 Antall timer ☐☐

Hvor mange timer tilbringer du *vanligvis* i *sittende* stilling i løpet av et døgn?
(arbeid, måltider, TV, bil etc.) .....399 Antall timer ☐☐

Hvor ofte er du plaget av søvnløshet? 401

Aldri, eller noen få ganger i året ..... ☐1
1–2 ganger i måneden ..... ☐2
Omtrent 1 gang i uka ..... ☐3
Mer enn en gang i uka ..... ☐4

Har du siste år vært plaget av søvnløshet slik at det har gått ut over arbeidsevnen? 402	*Ja*	*Nei*
	☐	☐

Har du i løpet av siste måned hatt innsovningsproblemer? *Bare ett kryss* 403

Nesten hver natt ..... ☐1 Av og til ..... ☐3
Ofte ..... ☐2 Aldri ..... ☐4

Har du i løpet av siste måned våknet for tidlig og ikke fått sove igjen? *Bare ett kryss* 404

Nesten hver natt ..... ☐1 Av og til ..... ☐3
Ofte ..... ☐2 Aldri ..... ☐4

Har du i løpet av siste måned vært plaget av nervøsitet (irritabel, urolig, anspent eller rastløs)? 405

Nesten hele tida ..... ☐1
Ofte ..... ☐2
Av og til ..... ☐3
Aldri ..... ☐4

HVORDAN DU HAR HATT DET

Har det noen gang i løpet av ditt liv vært *sammenhengende perioder på 2 uker eller mer* da du:	*Ja*	*Nei*
følte deg deprimert, trist og nedfor 406	☐	☐
hadde problemer med matlysten eller spiste alt for lite	☐	☐
var plaget av kraftløshet eller mangel på overskudd	☐	☐
virkelig bebreidet deg selv og følte deg verdiløs ...	☐	☐
hadde problemer med å konsentrere deg eller vanskelig for å ta beslutninger	☐	☐
hadde minst tre av de problemene som er nevnt ovenfor samtidig 411	☐	☐

HVORDAN DU SER PÅ DEG SELV

Folk ser på seg selv på ulike måter. Kryss av for hvert utsagn hvor enig eller uenig du er. *Ett kryss på hver linje*

	Svært enig	*Enig*	*Uenig*	*Svært uenig*
Jeg har en positiv holdning til meg selv 412	☐	☐	☐	☐
Jeg føler meg virkelig ubrukelig til tider 413	☐	☐	☐	☐
Jeg føler at jeg ikke har mye å være stolt av 414	☐	☐	☐	☐
Jeg føler at jeg er en verdifull person, i allefall på lik linje med andre 415	☐	☐	☐	☐

	Ja	*Nei*
Synes du at du har funnet et virkelig betydningsfullt innhold i livet ditt? 416	☐	☐
Føler du at du lever fullt ut? 417	☐	☐

HVORDAN DU FØLER DEG NÅ

*Sett kryss i den ruta utenfor det svaret som best beskriver dine følelser **den siste uka.** Bare ett kryss*

Er du vanligvis glad eller nedstemt? 418

Svært nedstemt ..... ☐1
Nedstemt ..... ☐2
Nokså nedstemt ..... ☐3
Både – og ..... ☐4
Nokså glad ..... ☐5
Glad ..... ☐6
Svært glad ..... ☐7

Har du i det store og hele en rolig og god følelse inne i deg? 419

Nesten hele tida ..... ☐1
Ofte ..... ☐2
Av og til ..... ☐3
Aldri ..... ☐4

Føler du deg stort sett sterk og opplagt, eller trøtt og sliten? 420

Meget sterk og opplagt ..... ☐1
Sterk og opplagt ..... ☐2
Ganske sterk og opplagt ..... ☐3
Både – og ..... ☐4
Ganske trøtt og sliten ..... ☐5
Trøtt og sliten ..... ☐6
Svært trøtt og sliten ..... ☐7

Legg det utfylte spørreskjemaet i den vedlagte svarkonvolutten og postlegg den så snart som mulig!
Porto er betalt.
Hjertelig takk for hjelpa!

Steinkjer Trykkeri AS – 74 16 30 00

APPENDIX 5

THE YOUNGHUNT QUESTIONNAIRE

FOLKEHELSA
Statens Institutt for Folkehelse
Samfunnsmedisinsk
forskningssenter,
Verdal

ung-hunt

Helseundersøkelsen i Nord-Trøndelag

Nå er det *din tur* til å delta i den store helseundersøkelsen i Nord-Trøndelag (***hunt***)!

Vi håper du har lest igjennom informasjonen du fikk med hjem om ung-hunt og bestemt deg for å være med!

Les nå først gjennom samtykkeerklæringen som ligger i spørreskjemaet. Sjekk at det er ditt navn som står der! Kryss av for om du vil delta eller ikke, og undertegn. Lever denne lappen til læreren. Alle lappene legges i en konvolutt som klistres igjen.

Navnet ditt skal IKKE være med på spørreskjemaet!

Fyll så ut spørreskjemaet. Sett et kryss i rutene ☒ du synes passer for deg. Svar så godt du kan! Spørsmål du ikke ønsker å svare på, kan du hoppe over. Når du er ferdig, legger du spørreskjemaet i den konvolutten du har fått, klistrer igjen og leverer konvolutten til læreren. Lever også spørreskjemaet selv om du ikke ble helt ferdig.

Alle svarene dine blir behandlet med taushetsplikt!

Ingen på skolen får se svarene dine.

Hvis du ønsker å snakke med noen om undersøkelsen, kan du ta kontakt med ***ung-hunt***-sykepleieren på skolen din eller ringe Folkehelsa i Verdal (se baksiden).

Lykke til og tusen takk!

Dato for utfylling av skjema: ____/ ___19 ___

1. Er du gutt eller jente ? *Gutt* ☐ *Jente* ☐

2. Hvilken klasse går du i ?

	Allmennfaglig	Yrkesfaglig
* *1. videregående*	☐	☐
* *2. videregående*	☐	☐
* *3. videregående*	☐	☐
* *Folkehøgskole*	☐	

3. Hvilke planer for videre utdanning har du ? (Sett ett eller flere kryss)

* *Ingen* ☐
* *Høgskole eller universitet mindre enn 4 år* ☐
* *Høgskole eller universitet i 4 år eller mer* ☐
* *Annen yrkesutdanning* ☐
* *Vet ikke* ☐

OM DER DU BOR

4. Hvilken type bolig (hus) bor du i ? (Sett bare ett kryss)

* *Enebolig/villa* ☐
* *Blokk/terasseleilighet* ☐
* *Gardsbruk* ☐
* *Rekkehus/2-4 mannsbolig* ☐
* *Annen bolig* ☐

5. Hvem bor du sammen med nå ? (Her kan du sette ett eller flere kryss)

* *Mor* ☐
* *Far* ☐
* *1-2 søsken* ☐
* *3 eller flere søsken* ☐
* *Mors nye mann eller samboer* ☐
* *Fars nye kone eller samboer* ☐
* *Ektefelle/samboer/venner* ☐
* *Alene/på hybel* ☐
* *Fosterforeldre* ☐
* *Andre* ☐

6. Er det heldekkende tepper (teppegulv) hjemme hos deg:

- i stua ?	*Ja* ☐	*Nei* ☐
- på soverommet ditt ?	*Ja* ☐	*Nei* ☐

7. Er det katt i boligen (hjemme hos deg) ? *Ja* ☐ *Nei* ☐

8. Er det hund i boligen (hjemme hos deg) ? *Ja* ☐ *Nei* ☐

9. Er det andre pelskledde dyr i boligen (hjemme hos deg)? *Ja* ☐ *Nei* ☐

OM HELSA DI

10. Hvordan er helsa di nå ? (Sett ett kryss for det som passer for deg)

* *Dårlig* ..... ☐		* *God* ..... ☐	
* *Ikke helt god* ..... ☐		* *Svært god* ..... ☐	

11. Er du funksjonshemmet på noen av disse måtene ?
(Sett ett kryss på hver linje)

	Nei	Litt	Middels	Mye
* *Er bevegelseshemmet*	☐	☐	☐	☐
* *Har nedsatt syn*	☐	☐	☐	☐
* *Har nedsatt hørsel*	☐	☐	☐	☐
* *Hemmet pga. kroppslig sykdom*	☐	☐	☐	☐
* *Hemmet pga. psykiske plager*	☐	☐	☐	☐

12. Har du hatt noen av disse plagene i løpet av de siste 12 månedene ?
(Sett ett kryss på hver linje)

	Aldri	Sjelden	Av og til	Ofte
A *Hodepine (uten kjent medisinsk årsak)*	☐	☐	☐	☐
B *Nakke og skuldersmerter*	☐	☐	☐	☐
C *Ledd og muskelsmerter*	☐	☐	☐	☐
D *Magesmerter (uten kjent medisinsk årsak)*	☐	☐	☐	☐
E *Kvalme*	☐	☐	☐	☐
F *Treg mage*	☐	☐	☐	☐
G *Diare, magesyke*	☐	☐	☐	☐
H *Hjertebank*	☐	☐	☐	☐
I *Bronkitt eller lungebetennelse*	☐	☐	☐	☐
J *Ørebetennelse*	☐	☐	☐	☐
K *Bihulebetennelse*	☐	☐	☐	☐

13. Hvis du har svart «aldri» på <u>alle</u> plagene nevnt ovenfor: Har du hatt noen av disse plagene <u>ofte</u> tidligere (dvs. før de siste 12 månedene) **?**

Ja ☐ *Nei* ☐

Hvis ja: **Hvilke plager (se ovenfor) var det ?** (Skriv navn eller bokstavene ovenfor som passer)

OM LUFTVEISPLAGER

14. Har du noen gang hatt tung pust eller piping/surkling/tetthet i brystet ?
Ja ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **19**

15. Har du hatt tung pust eller piping/surkling/tetthet i brystet i løpet av de siste 12 månedene ? *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **19**

16. Hvor mange anfall med tung pust eller piping/surkling/tetthet i brystet har du hatt i løpet av de siste 12 månedene ?

Ingen ☐ *1 til 3* ☐ *4 til 12* ☐ *Mer enn 12* ☐

17. Hvor ofte i gjennomsnitt har søvnen din blitt forstyrret p.g.a. tung pust eller piping/surkling/tetthet i brystet de siste 12 månedene?

Aldri våknet ☐ *Mindre enn en natt pr. uke* ☐ *En eller flere netter pr. uke* ☐

18. Har piping/surkling/tetthet i brystet eller tung pust vært så alvorlig de siste 12 månedene at du har hatt problemer med å snakke, slik at du bare har kunnet si ett eller to ord mellom hver pust ?

Ja ☐ *Nei* ☐

****

19. Har du noen gang hatt astma ? *Ja* ☐ *Nei* ☐

Hvis ja:
Har lege sagt du har hatt astma ? *Ja* ☐ *Nei* ☐

20. **Har du i løpet av de siste 12 månedene hatt tung pust eller piping/surkling/tetthet i brystet under eller etter fysisk trening, aktiv lek eller mosjonering ?**

Ja ☐ *Nei* ☐

21. **Har du i løpet av de siste 12 månedene hatt tørr hoste om natten uten å være forkjølet eller ha annen luftveisinfeksjon ?**

Ja ☐ *Nei* ☐

OM UTSLETT

22. **Har du noen gang hatt kløende utslett som har kommet og gått i minst 6 måneder ?** *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **27**

23. **Har du noen gang hatt dette kløende utslettet i løpet av de siste 12 månedene ?** *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **27**

24. **Har dette kløende utslettet noen gang sittet på noen av de følgende stedene: albuebøyene** (på innsiden), **bak knærne, foran på anklene, under baken eller rundt hals, ører eller øyne ?**

Ja ☐ *Nei* ☐

25. **Har dette utslettet vært helt borte noen gang i løpet av de siste 12 månedene ?** *Ja* ☐ *Nei* ☐

26. **I løpet av de siste 12 månedene, hvor ofte i gjennomsnitt har du blitt holdt våken om natten på grunn av dette kløende utslettet ?**

* *Ingen ganger de siste 12 månedene* ..... ☐
* *Mindre enn en natt per uke* ..... ☐
* *En eller flere netter per uke* ..... ☐

****

27. **Har du noen gang hatt eksem ?** *Ja* ☐ *Nei* ☐

OM NESEPLAGER

Alle spørsmålene er om problemer som oppstår når du IKKE er forkjølet eller har influensa.

28. Har du noen gang hatt problemer med nysing eller tett eller rennende nese når du IKKE har vært forkjølet eller har hatt influensa ?

Ja ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **33**

29. I løpet av de siste 12 månedene, har du da hatt problemer med nysing, rennende eller tett nese uten å ha vært forkjølet eller å ha hatt influensa?

Ja ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **33**

30. I løpet av de siste 12 månedene, har disse neseproblemene vært ledsaget av kløende, rennende øyne ? *Ja* ☐ *Nei* ☐

31. I hvilke av de siste 12 månedene har du hatt neseproblemene ?
(Sett ett kryss for hver måned som passer)

* *Januar* .... ☐	* *Mai* ..... ☐	* *September* ..... ☐
* *Februar* .... ☐	* *Juni* ..... ☐	* *Oktober* ..... ☐
* *Mars* ..... ☐	* *Juli* ..... ☐	* *November* ..... ☐
* *April* ..... ☐	* *August* ..... ☐	* *Desember* ..... ☐

32. I løpet av de siste 12 månedene, hvor mye har disse neseproblemene virket inn på din daglige aktivitet ?

Ikke i det hele tatt ☐ *Litt* ☐ *Mye* ☐ *Veldig mye* ☐

****

33. Har du noen gang hatt høysnue eller neseallergi ? *Ja* ☐ *Nei* ☐

OM ALLERGI

34. Er du allergisk ? *Ja* ☐ *Nei* ☐ *Vet ikke* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **37**

35. Hva kjenner du selv at du er allergisk for ? Kryss av for hva slags plager du har for hver ting. (Sett ett eller flere kryss for hver linje)

	Ingen plager	Nese-plager	Øye-plager	Eksem-plager	Mage-plager	Astma/ puste-plager	Annet
* *Hund*	☐	☐	☐	☐	☐	☐	☐
* *Katt*	☐	☐	☐	☐	☐	☐	☐
* *Andre dyr* .	☐	☐	☐	☐	☐	☐	☐
* *Gress/trær*	☐	☐	☐	☐	☐	☐	☐
* *Husstøv* ...	☐	☐	☐	☐	☐	☐	☐
* *Mat*	☐	☐	☐	☐	☐	☐	☐
* *Røyk*	☐	☐	☐	☐	☐	☐	☐
* *Annet*	☐	☐	☐	☐	☐	☐	☐

36. Har du tatt allergitest hos lege (blodprøve, hudtest) **?**

Ja ☐ *Nei* ☐

OM MEDISINER

37. Bruker du noen av disse medisinene eller kosttilskuddene ?
Tenk på hva du bruker medisinene for. (Sett ett kryss for hver linje)

	Aldri	Av og til	Nesten daglig
* *Smertestillende medisin*	☐	☐	☐
* *Migrenemedisin*	☐	☐	☐
* *Sovemedisin*	☐	☐	☐
* *Nervemedisin*	☐	☐	☐
* *Beroligende medisin*	☐	☐	☐
* *Astmamedisin*	☐	☐	☐
* *Allergimedisin*	☐	☐	☐
* *Eksemsalve*	☐	☐	☐
* *Avføringstabletter*	☐	☐	☐
* *Jerntabletter*	☐	☐	☐
* *Vitamintilskudd*	☐	☐	☐
* *Tran*	☐	☐	☐
* *Homøopatmedisin, naturmedisin*	☐	☐	☐
* *Annet*	☐	☐	☐

*Hvis annet, hva*_____

OM ANDRE SYKDOMMER

38. Har lege sagt at du har:

	Ja	Nei
* *Epilepsi*	☐	☐
* *Diabetes (sukkersyke)*	☐	☐
* *Migrene*	☐	☐

39. Har du noen andre sykdommer som har vart over 3 måneder ?

Ja ☐ *Nei* ☐

*Hvilke(n) ?*_____

OM TOBAKK

40. Røyker noen hjemme hos deg ? (Sett ett eller flere kryss)

* *Nei, ingen* ☐
* *Ja, mor ...* ☐
* *Ja, far .....* ☐
* *Ja, søsken .....* ☐
* *Ja, andre .....* ☐

41. Har du prøvd å røyke ? (minst en sigarett) *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **45**

42. Røyker du selv ?
(Sett ett kryss og oppgi evt. antall sigaretter. En pakke tobakk er ca. 50 sigaretter)

- ☐ *Ja, jeg røyker ca _____ sigaretter daglig*
- ☐ *Ja, jeg røyker av og til, men ikke daglig*
- ☐ *Nei, ikke nå, men tidligere røykte jeg av og til*
- ☐ *Nei, ikke nå lenger, men tidligere røykte jeg ca _____ sigaretter daglig*
- ☐ *Nei, jeg røyker ikke*

HVIS DU HAR SVART «NEI, JEG RØYKER IKKE»: GÅ TIL SPØRSMÅL **45**

43. Hvor gammel var du da du begynte å røyke ? _____*år*

44. Hvor mange år tilsammen har du røykt daglig ? _____*år*

45. **Blir du noen gang sjenert av røyklukt :**

	Aldri	Av og til	Ofte
- på skolen ?	☐	☐	☐
- hjemme ?	☐	☐	☐

46. **Bruker du eller har du brukt snus, skrå eller lignende ?**

Nei, aldri ☐ *Ja, men jeg har sluttet* ☐ *Ja, av og til* ☐ *Ja, hver dag* ☐

HVIS DU HAR SVART «NEI, ALDRI»:GÅ TIL SPØRSMÅL **50**

47. **Hvor gammel var du da du begynte med snus/skrå ?** _____*år*

48. **Hvor mange år til sammen har du brukt snus/skrå ?** _____*år*

49. **Hvor mange esker/poser snus/skrå bruker/brukte du i uka ?** _____*antall*

OM IDRETT OG MOSJON

50. Utenom skoletida: **Hvor mange dager i uka driver du idrett, eller mosjonerer du så mye at du blir andpusten og/eller svett?**
(Sett bare ett kryss)

* *Hver dag*	☐	* *Ikke hver uke, men minst en dag hver 14.dag* .	☐
* *4-6 dager i uka* ..	☐	* *Ikke hver 14.dag, men minst en dag i måneden*	☐
* *2-3 dager i uka* ...	☐	* *Sjeldnere enn en dag i måneden*	☐
* *1 dag uka*	☐	* *Aldri*	☐

51. Utenom skoletida: **Til sammen hvor mange timer i uka driver du idrett eller mosjonerer du så mye at du blir andpusten og/eller svett?**
(Sett bare ett kryss)

* *Ingen*	☐	* *Omtrent 2-3 timer*	☐
* *Omtrent ½ time* ..	☐	* *Omtrent 4-6 timer*	☐
* *Omtrent 1 time* ...	☐	* *7 timer eller mer*	☐

52. **Bruker du astma-medisin før mosjon, trening eller idrettskonkurranser?**
Ja ☐ *Nei* ☐

53. Driver du aktiv idrett ?

Ja ☐ *Nei, men jeg drev med aktiv idrett før* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI» (aldri drevet aktiv idrett): GÅ TIL SPØRSMÅL **59**

54. Hvis du har sluttet: **Hvor gammel var du da du sluttet med aktiv idrett ? __*år***

55. Hvilke(n) idrett(er) er/var du med i ? (Sett ett eller flere kryss)

A Ski (langrenn, skiskyting) ..... ☐
B Ski (slalåm, hopp) ..... ☐

C Fotball ..... ☐

D Riding ..... ☐
E Skøyter, ishockey ..... ☐

F Håndball, basket, volleyball ..... ☐
G Kampidrett, boksing ..... ☐

H Bodybuilding ..... ☐
I Sykling ..... ☐

J Styrkeløft/vektløfting ..... ☐

K Friidrett/løp/orientering . ☐
L Svømming ..... ☐

M Gymnastikk/turn ..... ☐
N Annet, ... ☐
Hva ? _____

56. Deltar du i idrettskonkurranser, kamper ? (Sett ett kryss)

Ja ☐ *Nei, men jeg deltok før* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI» (aldri deltatt i konkurranser, kamper): GÅ TIL SPØRSMÅL **59**

57. På hvilket nivå deltok/deltar du i idrettskonkurranser ? (Angi høyeste nivå)

* *Lokalt nivå (klubbmesterskap, serier etc.)* ..... ☐
* *Kretsnivå* ..... ☐
* *Nasjonalt nivå (landsstevne, Norgesmesterskap)* ..... ☐

58. I hvilke(n) idrett(er) er/var dette ? (Skriv inntil 3 idretter du er/ var mest med på)

Jeg er/har vært mest aktiv i.....og har hold på med dette i .....år

Jeg er/har vært nest mest aktiv i .....og har holdt på med dette i .....år

Jeg er/har vært 3. mest aktiv i .....og har holdt på med dette i.....år

HVORDAN DU HAR DET

59. Når du tenker på hvordan du har det for tida, er du stort sett fornøyd eller er du stort sett misfornøyd ? (Sett bare ett kryss)

- * *Svært fornøyd* ..... ☐
- * *Meget fornøyd* ..... ☐
- * *Ganske fornøyd* ..... ☐
- * *Både og* ..... ☐
- * *Nokså misfornøyd* ..... ☐
- * *Meget misfornøyd* ..... ☐
- * *Svært misfornøyd* ..... ☐

60. Føler du deg stort sett sterk og opplagt eller trøtt og sliten ? (Sett bare ett kryss)

- * *Meget sterk og opplagt* . ☐
- * *Sterk og opplagt* ..... ☐
- * *Ganske sterk og opplagt.* ☐
- * *Både og* ..... ☐
- * *Ganske trøtt og sliten* ... ☐
- * *Trøtt og sliten* ..... ☐
- * *Svært trøtt og sliten* ..... ☐

61. Er du vanligvis glad eller nedstemt (trist) ? (Sett bare ett kryss)

- * *Svært nedstemt* (trist) .... ☐
- * *Nedstemt* (trist) ..... ☐
- * *Nokså nedstemt* (trist) .. ☐
- * *Både og* ..... ☐
- * *Nokså glad* ..... ☐
- * *Glad* ..... ☐
- * *Svært glad* ..... ☐

62. Hva slags oppfatning har du av deg selv ? Kryss av for hver av setningene under ettersom du er enig eller uenig i at de passer for deg. (Ett kryss for hver linje)

	Svært enig	Enig	Uenig	Svært uenig
* *Jeg har en positiv holdning til meg selv*	☐	☐	☐	☐
* *Jeg føler meg virkelig ubrukelig til tider*	☐	☐	☐	☐
* *Jeg føler at jeg ikke har mye å være stolt av* ...	☐	☐	☐	☐
* *Jeg føler at jeg er en verdifull person, i hvert fall på lik linje med andre*	☐	☐	☐	☐

63. Har du i løpet at den siste måneden:

	Nesten hver natt	Ofte	Av og til	Aldri
* *hatt vanskelig for å sovne inn ?*	☐	☐	☐	☐
* *våknet for tidlig og ikke sovnet igjen ?.*	☐	☐	☐	☐

64. Spørsmålene nedenfor dreier seg om hvordan du vanligvis opptrer, føler og handler. Kryss av det som passer best, enten Ja eller Nei for hver linje.

	Ja	Nei
* *Er du forholdsvis livlig ?*	☐	☐
* *Ville du bli oppskaket av å se et barn eller dyr lide ?*	☐	☐
* *Liker du å treffe nye mennesker ?*	☐	☐
* *Blir dine følelser lett såret ?*	☐	☐
* *Hender det ofte at du «går trøtt»?*	☐	☐
* *Liker du å spille andre et puss som av og til kan såre dem ?*	☐	☐
* *Er du ofte bekymret ?*	☐	☐
* *Er gode manérer og renslighet viktig for deg ?*	☐	☐
* *Bekymrer du deg for at fryktelige ting kan skje ?*	☐	☐
* *Tar du vanligvis selv det første skrittet for å få nye venner?*	☐	☐
* *Er du for det meste stille når du er sammen med andre ?*	☐	☐
* *Liker du å komme til avtaler i god tid ?*	☐	☐
* *Har du ofte følt deg trøtt og giddeslaus uten grunn ?*	☐	☐
* *Er det mange mennesker som forsøker å unngå deg ?*	☐	☐
* *Klarer du å holde fart i et selskap ?*	☐	☐
* *Bekymrer du deg for lenge etter en pinlig opplevelse ?*	☐	☐
* *Liker du å ha masse liv og røre rundt deg ?*	☐	☐
* *Forteller folk deg en masse løgner ?*	☐	☐

65. Nedenfor er en liste over noen problemer eller plager. Har du vært plaget av noe av dette <u>de siste 14 dagene</u> ? (Sett ett kryss for hver linje)

	Ikke plaget	Litt plaget	Ganske plaget	Veldig plaget
* *Vært stadig redd og engstelig*	☐	☐	☐	☐
* *Følt deg anspent eller urolig*	☐	☐	☐	☐
* *Følt håpløshet når du tenker på framtida*	☐	☐	☐	☐
* *Følt deg nedfor eller trist*	☐	☐	☐	☐
* *Bekymret deg for mye om forskjellige ting*	☐	☐	☐	☐

66. Har du i løpet av <u>den siste måneden</u> vært plaget av nervøsitet (irritabel, urolig, anspent eller rastløs) ?

Nesten hele tida ☐ *Ofte* ☐ *Av og til* ☐ *Aldri* ☐

OM FRITIDA

67. Tenk tilbake på den siste uka, altså de 7 siste dagene. Hvis du gjorde noe som står på lista nedenfor, omtrent hvor mange ganger gjorde du det ? (Sett ett kryss for hvert punkt med stjerne)

	Ingen gang	En gang	To eller tre ganger	Fire eller flere
* *Besøkte noen du kjente*	☐	☐	☐	☐
* *Fikk besøk*	☐	☐	☐	☐
* *Leste en bok du likte*	☐	☐	☐	☐
* *Hørte på musikk eller spilte et instrument lengre enn et kvarter av gangen*	☐	☐	☐	☐
* *Var ute mer enn 2 timer av gangen med kamerater eller venninner*	☐	☐	☐	☐
* *Var på møte eller trening i en forening eller et lag*	☐	☐	☐	☐
* *Drev med en annen hobby*	☐	☐	☐	☐
* *Så på TV eller video*	☐	☐	☐	☐
* *Gjorde lekser eller hjemmearbeid lengre enn en time*	☐	☐	☐	☐

68. Hvor mange lag eller foreninger er du med i ? (f.eks. idrettslag, speiderforening, musikk-korps el.)

Ingen ☐ *En* ☐ *To eller flere* ☐

OM VENNER

69. Har du hatt noen som du har regnet som din beste venn gjennom mesteparten av skoletiden ? *Ja* ☐ *Nei* ☐

70. Hender det at du føler deg ensom ? (Sett ett kryss)

* *Svært ofte* ..... ☐
* *Ofte* ..... ☐
* *Av og til* ..... ☐
* *Sjelden* ..... ☐
* *Svært sjelden eller aldri* ..... ☐

71. Er dine foreldre separert eller skilt, eller har de noen gang flyttet fra hverandre for mer enn ett år ? (Sett ett kryss og evt. alderen din)

* *Nei* ..... ☐

* *Ja, de flyttet fra hverandre eller ble separert da jeg var _____år, men flyttet senere sammen igjen* ..... ☐

* *Ja, de ble skilt eller flyttet fra hverandre for godt da jeg var _____år* ..... ☐

72. Hvis du har søsken, hvor godt forhold føler du at du har til søsteren eller broren din ? Hvis du har flere søsken, tenk på den du har det beste forholdet til. (Sett ett kryss)

* *Mye dårligere enn vanlig* ..... ☐
* *Dårligere enn vanlig* ..... ☐
* *Som vanlig* ..... ☐
* *Bedre enn vanlig* ..... ☐
* *Mye bedre enn vanlig* .... ☐

* *Har ikke søsken* ..... ☐

73. Omtrent hvor mange nære venner har du ? Regn med de du kan snakke fortrolig med og som kan gi deg god hjelp når du trenger det. Regn ikke med de du bor sammen med, men regn med andre slektninger. (Sett ett kryss)

* *Ingen* ..... ☐
* *En* ..... ☐
* *2 eller flere* ..... ☐
* *4 eller flere* ..... ☐

74. Har du fast kjæreste ? *Ja* ☐ *Nei* ☐

75. Føler du at du har mange nok venner ? *Ja* ☐ *Nei* ☐

OM SKOLEN

76. Hender noe av dette deg på skolen, eller har det hendt før? (Sett ett kryss for hvert punkt med stjerne)

	Aldri	En gang i blant	Ofte	Svært ofte
* *Har vanskelig for å konsentrere deg i timen*	☐	☐	☐	☐
* *Synes gym eller formingstimene er morsomme*	☐	☐	☐	☐
* *Synes andre timer er morsomme*	☐	☐	☐	☐
* *Krangler med læreren*	☐	☐	☐	☐
* *Gleder deg til å gå skolen*	☐	☐	☐	☐
* *Skulker*	☐	☐	☐	☐
* *Forstår når lærerne underviser*	☐	☐	☐	☐
* *Har det morsomt i friminuttene*	☐	☐	☐	☐
* *Er fornøyd med resultatene på prøver*	☐	☐	☐	☐
* *Kommer i slåsskamp*	☐	☐	☐	☐
* *Blir mobbet av andre elever*	☐	☐	☐	☐
* *Får skjenn av læreren*	☐	☐	☐	☐
* *Klarer ikke å være rolig i timene*	☐	☐	☐	☐
* *Kjeder deg, eller mistrives*	☐	☐	☐	☐

OM KOSTHOLD OG SPISEVANER

77. Hvor ofte spiser du til vanlig disse måltidene? (Sett ett kryss for hver linje)

	Hver dag	4-6 dg i uka	1-3 dg i uka	Sjeldnere eller aldri
* *Frokost*	☐	☐	☐	☐
* *Formiddagsmat/ nistepakke*	☐	☐	☐	☐
* *Varm middag*	☐	☐	☐	☐

78. Prøver du å slanke deg ?

Nei, vekten min er passe ☐ *Nei, men jeg trenger å slanke meg* ☐ *Ja* ☐

79. Hvor ofte hender det at du ikke spiser matpakken selv om du har den med ? (Sett ett kryss)

* *Hver skoledag* ..... ☐
* *4-6 dager i uka* ..... ☐
* *1-3 dager i uka* ..... ☐
* *Sjeldnere eller aldri* ..... ☐
* *Har aldri med matpakke* .. ☐

80. Hvor ofte drikker du eller spiser du noe av dette ?
(Sett ett kryss for hver linje)

	Mer enn 1 gang pr. dag	En gang pr. dag	Hver uke, men ikke hver dag	Sjeldnere	Aldri
* *Cola, brus eller andre leskedrikker*	☐	☐	☐	☐	☐
* *Lettmelk/skummet melk*	☐	☐	☐	☐	☐
* *Helmelk*	☐	☐	☐	☐	☐
* *Kaffe*	☐	☐	☐	☐	☐
* *Potetgull o.l*	☐	☐	☐	☐	☐
* *Sukkertøy, sjokolade, andre søtsaker*	☐	☐	☐	☐	☐
* *Pommes frites, hamburger, pølser*.....	☐	☐	☐	☐	☐
* *Grovt brød/knekkebrød*	☐	☐	☐	☐	☐
* *Meierismør*	☐	☐	☐	☐	☐
* *Margarin*	☐	☐	☐	☐	☐
* *Frukt*	☐	☐	☐	☐	☐
* *Grønnsaker*	☐	☐	☐	☐	☐

81. Vil du si om deg selv at du er: (Sett ett kryss)

* *Svært tykk* ..... ☐
* *Litt tykk* ..... ☐
* *Omtrent som andre* ..... ☐
* *Heller tynn* ..... ☐
* *Svært tynn* ..... ☐

82. Nedenfor er en liste over ting som gjelder spisevaner. Kryss av for hva som passer deg. (Sett ett kryss for hvert punkt med stjerne)

	Aldri	Sjelden	Ofte	Alltid
* *Når jeg først har begynt å spise, kan det være vanskelig å stoppe*	☐	☐	☐	☐
* *Jeg bruker for mye tid til å tenke på mat*	☐	☐	☐	☐
* *Jeg føler at maten kontrollerer livet mitt*	☐	☐	☐	☐
* *Når jeg spiser, skjærer jeg maten opp i små biter*	☐	☐	☐	☐
* *Jeg bruker lengre tid enn andre på et måltid*	☐	☐	☐	☐
* *Eldre mennesker synes at jeg er for tynn*	☐	☐	☐	☐
* *Jeg føler at andre presser meg til å spise*	☐	☐	☐	☐

OM ALKOHOL

83. Har du noen gang prøvd å drikke alkohol ? (Dvs. alkoholholdig øl, vin , brennevin eller hjemmebrent)

Ja ☐ *Nei* ☐ *Vet ikke* ☐

HVIS DU HAR SVART «NEI», GÅ TIL SPØRSMÅL **87**

84. Har du noen gang drukket så mye alkohol at du har vært beruset (full) ? (Sett ett kryss)

* *Nei, aldri* ..... ☐
* *Ja, en gang* ..... ☐
* *Ja, 2-3 ganger* ... ☐
* *Ja, 4-10 ganger* ..... ☐
* *Ja, mer enn 10 ganger* ..... ☐

85. Omtrent hvor mye øl, vin eller brennevin drikker du vanligvis i løpet av <u>to uker</u> ? Regn ikke med alkoholfritt øl. Sett **0** hvis du **ikke drikker**.

Øl _____ *antall ½ flasker* *Brennevin* _____ *antall glass(ca ½ dl)*

Vin _____ *antall glass (ca 1 dl)* *Hjemmebrent* _____ *antall glass(ca ½ dl)*

86. På hvilke ukedager drikker du som oftest alkoholholdige drikker?
(Sett ett eller flere kryss)

* *Drikker ikke* ..... ☐
* *Fredager* . ☐
* *Lørdager* . ☐
* *Andre dager i uken* ..... ☐

****

87. Har du noen gang sett at noen av dine foreldre har vært beruset?
(Sett ett kryss)

* *Aldri* ..... ☐
* *Noen få ganger* .. ☐
* *Noen ganger i året* ..... ☐
* *Noen ganger i måneden* ..... ☐
* *Noen ganger i uka* ..... ☐

LESE- OG SKRIVEVANSKER

88. Hvor ofte føler du at din lese- og skriveferdighet er utilstrekkelig for de oppgavene du skal gjøre på skolen og /eller i fritiden?

	Aldri	Nesten aldri	Noen ganger	Ofte	Alltid
* *Lesing*	☐	☐	☐	☐	☐
* *Skriving*	☐	☐	☐	☐	☐

89. Har du hatt spesielle lese- eller skriveproblemer <u>de siste 12 månedene</u> ?

	Store problemer	Noen problemer	Ingen problemer
* *Lesing*	☐	☐	☐
* *Skriving*	☐	☐	☐

90. Får du hjelp for lese- eller skriveproblemer nå? *Ja* ☐ *Nei* ☐

91. Har du hatt lese- eller skriveproblemer tidligere, men ikke <u>de siste 12 månedene</u> ? *Ja* ☐ *Nei* ☐

Hvis ja, ***fikk du hjelp den gangen?*** *Ja* ☐ *Nei* ☐

92. Har du noen form for talevansker? *Ja* ☐ *Nei* ☐

Hvis ja: **hvilke:**

* *Stamming* ..... ☐
* *Uttalevansker* ..... ☐
* *Stemmevansker* ..... ☐
* *Vansker med å uttrykke meg* .... ☐

OM HELSETJENESTEN

93. Har du i løpet av de siste 12 månedene vært hos: (Ett kryss på hver linje)

	Ja	Nei
* *Allmennpraktiserende lege* (lege utenom sykehus)	☐	☐
* *Lege på sykehus* (uten at du var innlagt)	☐	☐
* *Psykolog*	☐	☐
* *Fysioterapeut*	☐	☐
* *Kiropraktor*	☐	☐
* *Homøopat*	☐	☐
* *Annen behandler (*naturmedisiner,fotsoneterapeut, håndspålegger, «healer», «synsk», e.l.)	☐	☐

94. Har du noen gang vært innlagt på sykehus (utenom da du ble født)**?**

Nei, aldri ☐ *Ja, en gang* ☐ *Ja, mer enn en gang* ☐

*Hvis ja:***Har du vært innlagt på sykehus i løpet av de siste 12 månedene?**

Ja ☐ *Nei* ☐

95. Hvor ofte har du vært hos skolehelsetjenesten de siste 12 månedene?

Ingen ganger ☐ *1 -3 ganger* ☐ *Mer enn 3 ganger* ☐

96. Har du selv noen gang tatt kontakt med skolehelsetjenesten?

Ja ☐ *Nei* ☐

97. Ønsker du deg mer kontakt med skolehelsetjenesten enn det du har hatt?

Ja ☐ *Nei* ☐

98. Hvor ofte har du vært borte fra skolen p.g.a. sykdom de siste 12 månedene ?

Mindre enn en uke ☐ *1-2 uker* ☐ *Mer enn 2 uker* ☐

OM UTVIKLING

Du er nå i en alder da kroppen din kan ha begynt å forandre seg og bli mer og mer lik kroppen til en voksen. Her er det noen spørsmål om kroppslige forandringer som skjer med ungdommer i din alder.

99. Når man er tenåring, er det perioder da man vokser raskt. Har du merket at kroppen din har vokst fort (blitt høyere) ? (Sett ett kryss)

* *Nei, den har ikke begynt å vokse* ..... ☐
* *Ja, den har såvidt begynt å vokse raskt* ..... ☐
* *Ja, den har helt tydelig begynt å vokse* ..... ☐
* *Ja, det virker som om jeg er ferdig med å vokse raskt* ..... ☐

100. Og hva med hår på kroppen (under armene og i skrittet) ? Vil du si at håret på kroppen din har: (Sett ett kryss)

* *Ikke begynt å vokse enda* ..... ☐
* *Såvidt begynt å vokse* ..... ☐
* *Helt tydelig begynt å vokse* ..... ☐
* *Det virker som om håret på kroppen er utvokst* ..... ☐

101. Når du ser på deg selv nå, mener du at du er/var tidligere eller senere fysisk moden enn andre på din alder ? (Sett ett kryss)

* *Mye tidligere* ..... ☐
* *Noe tidligere* ..... ☐
* *Lite grann tidligere* ..... ☐
* *Akkurat som andre* ..... ☐
* *Lite grann senere* ..... ☐
* *Noe senere* ..... ☐
* *Mye senere* ..... ☐

SPØRSMÅL BARE FOR JENTER

102. Har du begynt å få bryster? (Sett ett kryss)

* *Nei, har ikke begynt ennå* ☐
* *Ja, har såvidt begynt* ..... ☐
* *Ja, har helt tydelig begynt* ..... ☐
* *Det virker som om brystene er fullt utviklet* ☐

103. Har du fått menstruasjon («mensen»)? *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SPØRSMÅL **106**

104. Hvor gammel var du da du fikk din første menstruasjon?

Jeg var .....år og .....måneder.

105. Har du noen gang etter en blødning vært blødningsfri i flere måneder (uten å ha vært gravid)? (Sett ett kryss)

* *Ja, 2-5 mnd* ..... ☐
* *Ja, 6-12 mnd* ..... ☐
* *Ja, mer enn 1 år* ..... ☐
* *Nei, aldri* ..... ☐

****

106. Har du noen gang fått behandling av lege for:

	Ja	Nei
* *Underlivsbetennelse (eggstokkbetennelse, eggleder betennelse)?*	☐	☐
* *Utflod*	☐	☐
* *Menstruasjonssmerter*	☐	☐

107. Har du noen gang brukt p-piller eller minipiller? *Ja* ☐ *Nei* ☐

HVIS DU HAR SVART «NEI»: GÅ TIL SISTE SIDE

108. Hvor gammel var du første gang du brukte p-piller? _____år

109. Hvor lenge har du brukt p-piller i alt? _____år

110. Bruker du p-piller nå? *Ja* ☐ *Nei* ☐

SPØRSMÅL BARE FOR GUTTER

112. Har du begynt å komme i stemmeskiftet? (Sett ett kryss)

* *Nei, har ikke begynt ennå* ..... ☐
* *Ja, har såvidt begynt* ..... ☐
* *Ja, har helt tydelig begynt* ..... ☐
* *Det virker som om stemmeskiftet er ferdig* ..... ☐

113. Har du begynt å få bart eller skjegg? (Sett ett kryss)

* *Nei, har ikke begynt ennå* ..... ☐
* *Ja, har såvidt begynt* ..... ☐
* *Ja, har helt tydelig begynt* ..... ☐
* *Ja, har fått en god del skjeggvekst* ..... ☐

114. Har du vært behandlet hos lege for: (Sett ett kryss for hver linje).

	Ja	Nei
* *Trang forhud*	☐	☐
* *Utflod fra urinrøret*	☐	☐
* *Betennelse i forhuden eller pungen* (testiklene)	☐	☐

FOR ELEVER I VIDEREGÅENDE SKOLE

Disse spørsmålene står bare i spørreskjemaet for dere som går i videregående skole.

115. Har du i løpet av det siste året ofte følt at du har presset deg, eller stadig drevet deg selv framover ?

Ja ☐ *Nei* ☐ *Vet ikke* ☐

116. Føler du deg under tidspress, også når det gjelder daglige gjøremål ?

* *Alltid, eller nesten alltid* ..... ☐
* *Noen ganger* ..... ☐
* *Aldri* ..... ☐

117. Har du hatt tanker om å ta ditt eget liv ? *Ja* ☐ *Nei* ☐

118. Har du noen gang prøvd hasj, marihuana eller lign. ? *Ja* ☐ *Nei* ☐

119. Har du noen gang brukt anabole steroider eller andre dopingmidler ? *Ja* ☐ *Nei* ☐

120. Hvis ja, **hvor gammel var du første gang ?** _____år

121. Har du noen gang hatt samleie ? *Ja* ☐ *Nei* ☐

122. For JENTER: Har du noen gang vært gravid uten at du ønsket det ?

Ja ☐ *Nei* ☐

123. For GUTTER: Har en jente noen gang blitt gravid med deg uten at det var meningen ?

Ja ☐ *Nei* ☐ *Vet ikke* ☐

For BÅDE gutter og jenter:

Hvis ja:

124. Hvor gammel var du da dette skjedde ? ____år

125. Ble det utført abort ? *Ja* ☐ *Nei* ☐ *Vet ikke* ☐

KOMMENTARER

Hvis du har tid, kan du gjerne skrive litt om det du synes er viktig, men som det ikke er spurt etter i spørreskjemaet. Hvordan synes du det er å være ung i dag? Er det noe du mener kan bli bedre når det gjelder helse og trivsel for dere som er unge?

Vennlig hilsen

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